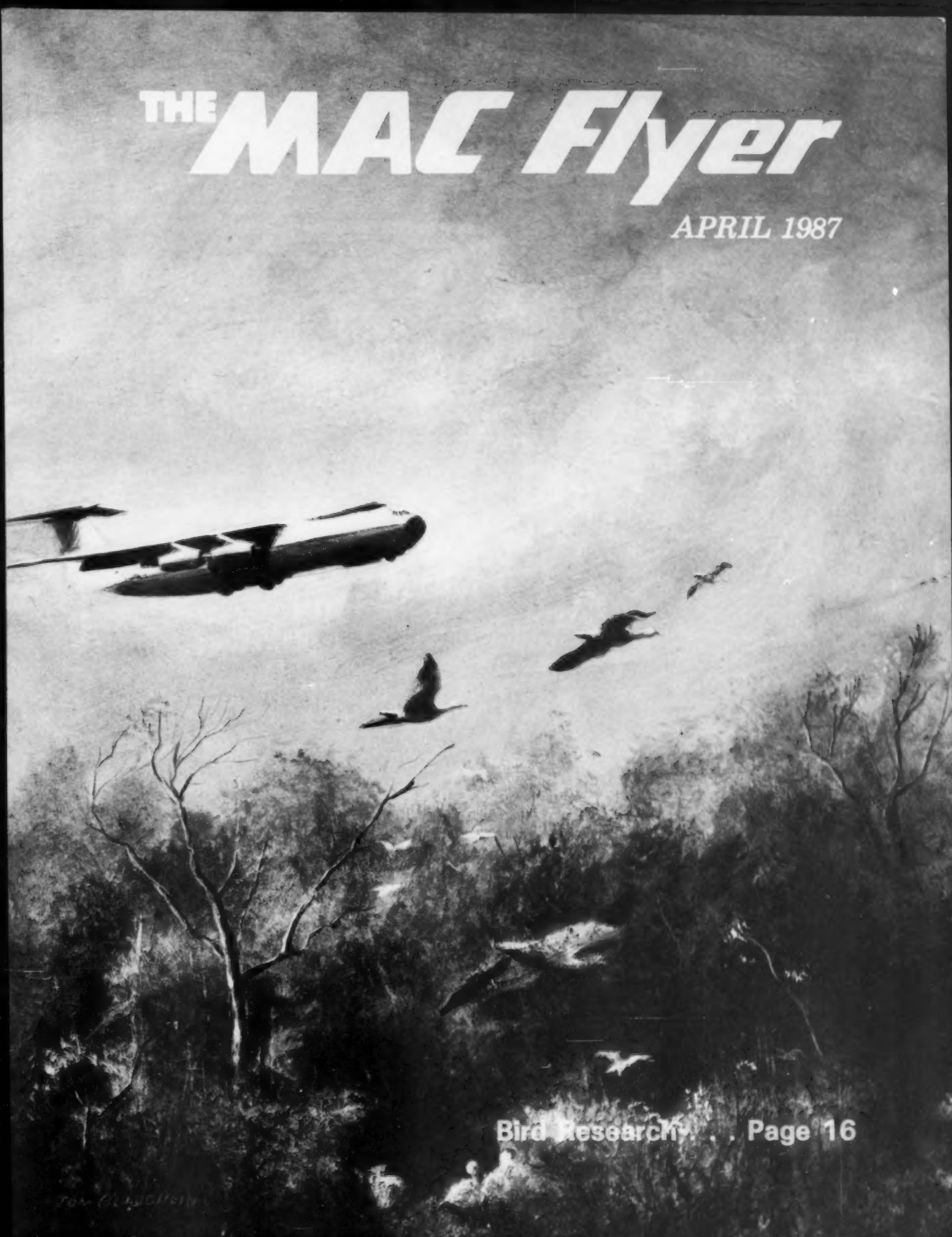
THE MAC Flyer

APRIL 1987



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THE MAC Flyer

For Greater Safety in MAC Air Operations

April 1987 | MACRP 127-5 | VOL XXXIV NO. 4

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About the Cover: Original artwork by Tommy O'Laughlin

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Too late to learn now—for us.

Careless Habits

by Captain Anne Martin
437 MAW, Charleston AFB, SC

"Well, Sergeant Harris, are you all set for two weeks of 'hurry up and wait' beneath the beautiful glaciers of Norway?" I asked my hydraulic specialist as we walked out to the C-141.

"Yes, sir, Major Brown," he replied, shivering as if from the Norwegian cold. We were boarding the jet in Frankfurt, en route to our duties as the airlift control element for another JCS exercise.

The young C-141 pilot interrupted our conversation, "Hey, Major Brown, are you still coming out to check on me?" I had flown with him on his first operational flight, as well

HONORABLE MENTION 1986 MAC FLIGHT SAFETY WRITING CONTEST

as recommended him for his aircraft commander check.

"No, Steve, I'm just a pax. Take me to Norway."

"Actually, Major," Lt. Steve Jordan answered, "I thought you might have some tips for flying through the Central European buffer zone."

That was just like Steve. He was always asking me questions about things I hadn't studied for ages.

"Oh, there's nothing to it," I bluffed. "Just be sure to stay on airways, in radar contact, and listen to guard."

"What if we get a Brass Monkey call?" Steve pursued.

"Uh. . . Uh . . .," I stammered. "Confirm your position and, squawk, ident." It's amazing what I can remember when I try.

"Would you like the jump seat?" Steve offered in return for the advice.

"No thanks, kid. I've logged enough time in that seat already."

I went to my passenger seat beneath the heating ducts and started remembering my previous flights with Steve. On our first overwater mission, he embarrassed me by asking when I was going to do the rapid decompression drill. Didn't he know *nobody* ever actually did that junk? I guess not; it was his first mission. I explained to him that I didn't want to make the engineer put out his cigarette or to wake up the loadmaster, so I was just going to skip that drill.

Then he wanted me to double-check each and every coordinate he loaded into the INS. Gosh, what were those Altus guys teaching our copilots? Didn't they know *nobody* ever actually did that stuff? I told Steve we got around that by letting him load the coordinates while I read them to him. Then, feeling a little bit guilty, I showed him how to check the distances between the waypoints.

Next, he wanted me to show him how to do a gross error coast out check. I remember asking him if that was in the new 55-141.

Shortly after that mission I went back to Altus Air Force Base for instructor pilot upgrade. I flew with Steve a few more times as he upgraded to first pilot. He never failed to ask me about some minor regulation I, along with half the pilots in the squadron, was used to ignore. I tried to teach Steve the difference between the really important regulations, and those designed just to protect the pilots with no sense.

Eventually Steve went to aircraft commander school. When he came back, I recommended him for his initial operational mission evaluation. I paid him back for all his previous embarrassing questions on his recommendation ride. I really pumped him full

of trivial knowledge so he could dazzle whoever his flight examiner would be. I remember raking him over the coals for not plotting our oceanic course on an OPC chart.

"But I can't find any OPCs," he whispered.

"Then you break open the map kit and plot our location on another ocean chart," I smirked.

"But you always told me those were useless," Steve continued to protest.

"Ah. Plotting your INS location on an oceanic chart is useless if you already know where you are," I answered wisely. "But it is very useful for passing a checkride. Just show the flight examiner that you know every regulation, and then, when he leaves, you can go back to your *real* flying habits."

"Major Brown, Lieutenant Jordan needs you up front," Sergeant Harris nudged me. I had been so busy reminiscing I wasn't even aware we had leveled off at cruising altitude.

"Can't leave a lieutenant alone for fifteen minutes," I winked at Harris and climbed onto the flight deck.

"What's going on?" I asked the confused-looking pilots.

"We heard a 'Brass Monkey' call over guard frequency. I squawked 'ident' on our transponder, and confirmed that we are flying from waypoint four to five, but something's not right," Steve explained. He was studying the full scale course deflection from his VOR.

"Did you ask radar to confirm our position?" I asked, amazed that I could remember anything from our buffer zone training. Steve's copilot made the request to the ground radar station.

"MAC 50269, I show you off course. Say your position," the voice on the radio answered.

"That's what I asked," Steve groaned. "I am reading us three-five miles southeast of Luneburg VOR," Steve answered.

"Well, let's see what waypoints four and five are," I said, pulling out the computerized flight plan. I checked INS waypoint coordinates for the first time in months. "Look, waypoint five should be ten point three five East, but you have ten point five five East."

"Oh, no, look outside!" the copilot shouted. A MIG pulled up on either side of us.

"What do we do now?" Steve asked, as his copilot made a distress call.

"Remember that inflight handbook I said you would never need?" I asked. Steve nodded. I continued, "Well, you better look at the page on interceptions and do what these guys want."

That was two weeks ago. We landed in East Germany and were escorted at gunpoint to this slimy jail. I don't know how many times I've been interrogated. I just hope they don't actually *try* me for being a spy. I know these guys well enough to know they don't have trials until they are ready to condemn you. Of course, I don't know how much longer I can bear this cell either. Poor Sergeant Harris was taken to a jail for enlisted personnel. I shudder to think what his living conditions must be like. The guards told me an American official was coming to see me today. I hope they're not lying. Wait, I hear someone coming. He is an American!

"Thank God you're here! When can I go home?"

"Major Brown, you and the pilots have committed a very serious offense."

"But I wasn't even flying. Whose side are you on?"

"The American government's side. The East Germans have proof that your C-141 was programmed to fly into their territory. Our government has been embarrassed and we have lost our multi-million dollar jet. The East Germans don't plan to return it. We are hopeful we can still get you and the rest of the passengers and crew released. In the meantime, we are being helped by the Red Cross to ensure your conditions are bearable. If the negotiations go well, we might get you released in just a matter of months."

I wanted to scream that I couldn't believe this was happening to me. No sound came out. The first American I had seen in a week just patted me on the back and left. How I envied him!

How did this happen to me? I never flew so carelessly as to get lost in the buffer zone. But maybe I flew so carelessly that I didn't realize what habits I was teaching other pilots. Maybe, at one time or another, everyone becomes one of those pilots with so little sense; who maybe just for a few minutes forget that a picky regulation was designed just to protect them. That reminds me, we should have asked radar for a heading of 270° when we could not confirm our position during the "Brass Monkey." What a time to remember!!!

If I ever get a chance to fly again, I'm going to make sure I teach my crew to pay attention to all the regulations. *Most are there to protect the crew.*

Captain Martin Graduated from the Air Force Academy in 1980. Following graduation she attended UPT at Reese AFB, TX. After earning her wings, she was assigned to the 41st MAS, Charleston AFB as a C-141 pilot. She now serves as a simulator instructor and flight examiner aircraft commander.

A Different Ball Game

by Mr. Robert N. Buck

The sophisticated autopilot and its computers, the CRTs, HSIs, and ADIs, with a plethora of information, and the wonders of electronics have come together with the human pilot in the cockpit—all to the good. But everything is not perfect and there are times a certain confusion exists when we're not quite sure who is in command of the airplane—the hardware or the pilot.

Of course there's no question about whose responsibility flight management is—the *real* pilot's—and if you don't believe it, have you ever heard of an autopilot or computer being cross-examined at an accident hearing? Of course not.

The problem is autopilots and computers do remarkable things, remarkable enough we may forget they are not very smart and only do what they've been programmed to do. When it comes to thinking, the computer hasn't got it (yet). It's a rote object, it does things by rote and only does precisely what it's been "taught" to do.

This means some person taught it—programmed it—and there's a chance that person didn't cover all bases in the complicated interrelationships of flight; perhaps it isn't possible.

For example, we're flying on altitude hold, in cruise at hold altitude. It's warm and we're high and almost thrust limited. An engine flames out and now we don't have enough thrust to stay up there. But the autopilot is on altitude hold and may keep pulling the nose up, trying to hold altitude, until we spin in, if we haven't enough sense to recognize the problem, take it off altitude hold, and get the nose down.

Some autopilots are programmed with an alpha floor, meaning that if the angle of attack reaches a dangerous level, the autopilot will do something about it. All autopilots, however, aren't so programmed and the hazard exists. Also, when one gets near the alpha floor they are close to serious problems; it may take careful flying to keep from doing something undesirably spectacular.

This is just one example of the kind of dullard "thinking" autopilots do. It, or they, are going to do exactly what you set them up to do, if there's a change in conditions or requirements, you'll have to reprogram—set up—the system to take care of it.

That's the required normal attention, but added to that is the possibility of an inadvertent disengagement of all or part of the auto system. Certain limits are set up that, if exceeded, will cause disengagement. Altitude hold is a good example. Knock against the control wheel, while moving about the cockpit, and, if the force is enough (it doesn't have to be much), the altitude hold goes off. If the pilots aren't scann-

ing frequently, an excessive altitude change can occur.

We could dig up more examples, but the key point is that when you're on autopilot, constant scanning is still required to make certain all is well, and the autopilot is doing its "thing" properly. This scan should include what is set up and in what mode. On some aircraft the annunciation is scattered about, poorly lit, and in places not easy to see or within normal scan. There isn't one of us who hasn't been surprised to find something off we thought was ON.

Then there's the matter of working properly. Big errors, the thing simply breaking down totally, are fairly easy to recognize, but that isn't always the way it happens. Sometimes the malfunction is subtle, like the aircraft landing at JFK with the autothrottle that kept sneaking on more power than needed until the aircraft finally whistled in over the runway with 30+ knots excess speed. It came to rest off the far end of the airport, badly damaged. (See *Imperfect Monitor,* April 1985 *TMF,* Ed.)

It boils down to this: We have to keep tabs on how things are set up and then how they are doing the job. Aside from autopilots, this includes waypoint programming and constant checking to be certain we're really going where we want to.

The autopilot is a different way of flying the airplane, different controls, but it's our responsibility to use them properly. Unlike an elevator hooked by cable to the control column, the autopilot has electronic gadgetry that makes it move controls, but this introduces the need for added vigilance and checking. We don't worry much that the control column is connected by its cable to the elevator, but we sure as heck have to keep an eye on whether or not all those mysterious little electronic things are doing what they are supposed to be doing when they're part of the control system.

Automatic flight systems have greatly expanded our capabilities and have made it easier to fly—stick and rudder. With that, however, they've given us other things to do. Work is still there and the workload hasn't decreased, it's just a different kind of work. The need for flying the airplane, and the responsibility, haven't gone away. It's changed the job from manual labor to mental labor, but it hasn't removed the need for vigilance.

Another problem in auto flight is splitting the work between the pilot and the autopilot. For example, the pilot flying the airplane, while using auto throttles to keep the proper speed. This looks like a poor way of doing things because the loop of who's doing what isn't smooth and continuous.

If we're flying the airplane manually, our control inputs are a result of scanning instruments for performance deviations, and that subtle feel of acceleration. We'll also know how much power we've applied or removed and when it will act to give us the flight path we desire.

If, however, we're flying manually, but letting auto throttles handle speed changes—climb, descent, or whatever—we aren't really aware of the factors as to when the power will come or go and effect the flight path.

We also introduce an extra requirement of seeing what the auto throttle is actually doing—as, evidently, the pilot we mentioned at JFK didn't do. So we've added monitoring to the workload in a manner foreign to our normal way of flying. It seems we've degraded the concept of autopilots and work.

If we use the autopilot to its fullest, then our work method has changed to monitoring and programming. If we split the flying, however, then we introduce two ways of doing the job with a workload increase and the chance for missing parts of one method or the other.

The task of programming the equipment and setting it up properly isn't always easy. Glitches occasionally occur and the system, for no apparent reason, goes ape, with lights flashing, horns blaring and all that. In the early days of the 747 it was endemic until the system was smoothed out and we learned all the rules of its operation.

We have to be on top of what is going on because glitches *can* occur, our programming isn't perfect, or we could get a sudden ATC request, like changing the runway at the last moment. That way we can push the control wheel button to shut it off and take over manually, if that's the easiest way out of an immediate and somewhat frantic problem. There are tight situations when there just isn't time to sort it all out and reprogram. The smart thing to do is deactivate the autopilot.

There's no doubt the modern autopilot is a marvelous thing and especially useful in the complicated environment we fly. It's difficult to visualize flying in our airways system without it. But don't mistakenly believe the real need for work has decreased, it hasn't—it's just changed to a different kind. The pilot keeps his responsibility and requirement for constant attention. Just because the autopilot handles stick and rudder, we shouldn't get the idea we can let "George" do it while we go out to lunch.

(Editor's note: Extensive research shows *any* use of hands-on flying helps enhance our awareness and ability to monitor the rest of the system. Electronics are great and can be a wonderful aid, but the autopilot isn't aware of the complete flight environment, it's just one part of it. *Real* control still rests in the connection between your brain and those two appendages at the ends of your arms.)

Courtesy Business Aviation Journal

Mishap With A Moral

We've got to get . . .

Back To Basics

Flying airplanes requires a set of basic physical skills ingrained through training, repetition, and study. It also requires another, non-physical basic skill—*judgment*. This skill helps us determine when the demands of a situation exceed our capability and what steps to take to bring the situation back under control. Failure to develop this skill resulted in the deaths of all eight people on board Bar Harbor Airlines Flight 1808 on 25 August 1985. A regularly scheduled commuter flight, the airplane crashed in poor weather during an ILS approach to the Auburn-Lewiston Municipal Airport at Auburn, Maine.

FLIGHT HISTORY

The relief flightcrew for N300WP, a Beech Model 99, reported for duty at the Bar Harbor Airlines' operations department in Bangor, Maine, about 1400 EDT on 25 August 1985. They were scheduled to make four trips between Bangor and Boston, with en route stops at Auburn (Auburn-Lewiston), Augusta, and Waterville, Maine. The crew going off duty had flown four trips with N300WP earlier that day. They had a brief discussion with the relief flightcrew in the operations office. Reportedly, the relief crew was in good spirits and did not express any problems or concerns.

The off-duty crew reported their flights as routine with no airplane discrepancies. The captain said he considered N300WP one of the better airplanes in the airline's fleet. He also said the two instrument landing systems on board the airplane "... cross-checked well . . . " and the two altimeters were within 20 feet of each other.

N300WP departed Bangor for Boston as Flight 1793 at 1530 EDT, 15 minutes late. The airplane flew in continually deteriorating weather throughout the afternoon and early evening. The crew returned to Bangor about 1824, now 25 minutes late. During the stop at Bangor, the airline flight follower talked to the captain by telephone and informed him there was a change in the schedule because of air traffic control delays. The captain's flight was to depart Boston on the next shuttle as Flight 1808. Flight 1808 normally departs Boston for stops at Augusta and Waterville and terminates at Bangor. The company added a passenger stop at Auburn-Lewiston.

The airplane departed Bangor as Flight 1755 and arrived in Boston at 2015, after a stop at Augusta. Six passengers boarded the airplane along with ten passenger bags and two mail pouches. Two passengers were ticketed to Auburn-Lewiston, three to Augusta, and one to Waterville.

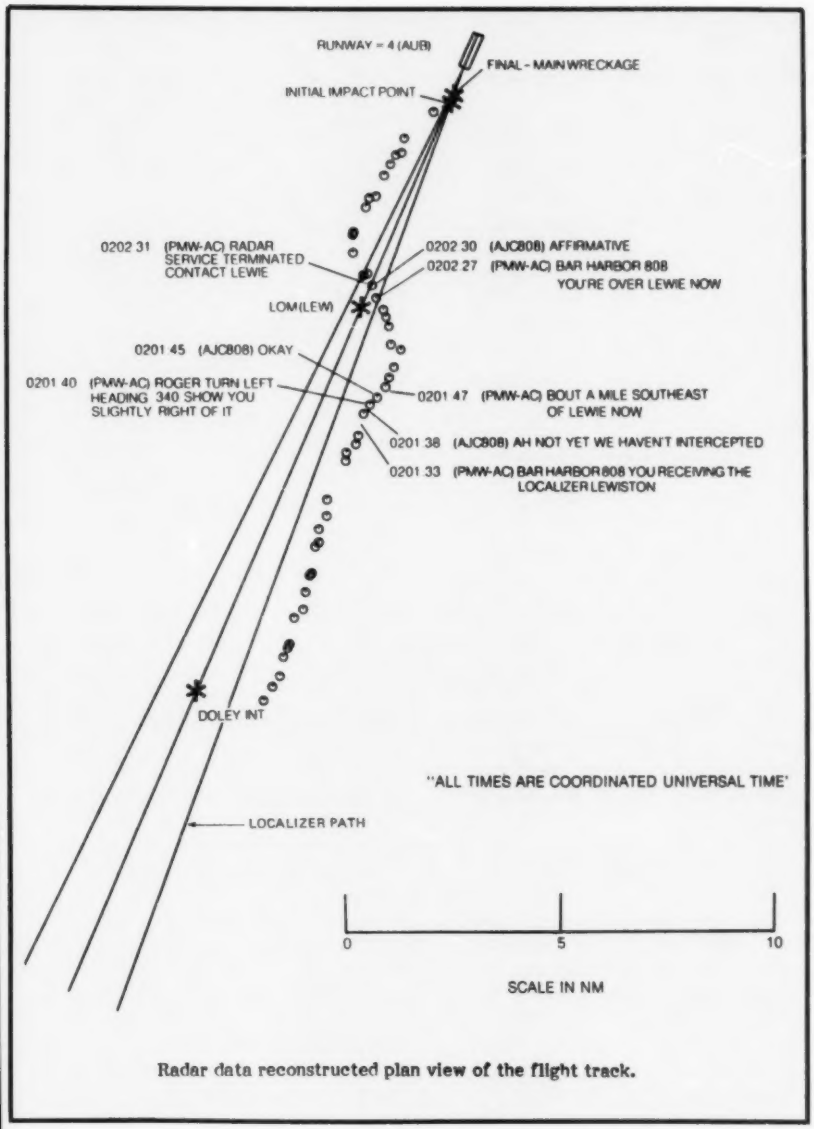
At 2100, the weather at Auburn-Lewiston was: indefinite ceiling, 300 feet obscured, visibility 1 mile in light drizzle and fog, altimeter 30.24 inHg. The Augusta weather was: indefinite ceiling, 100 feet obscured, visibility ¾ mile in light rain and fog, altimeter 30.27. At Waterville, it was indefinite ceiling, 400 feet obscured, visibility 1 mile in light rain and fog, altimeter 30.25.

At 2117:06, the captain contacted Boston Clearance Delivery and advised they were en route to Auburn-Lewiston. The clearance delivery controller replied, "I show you going to Augusta, is that correct?" The captain replied, "It's totally changed, first ah . . . we'll take the one to Augusta and change it en route." The controller gave the flight the following clearance: "... Augusta Logan three, Pease (PSN VOR) as filed, seven thousand will be the final, squawk 5374 . . ." At 2126, ground control cleared the flight to taxi to runway 04L; the airline ramp agent described the departure as routine. At 2130, Flight 1808 was cleared for takeoff and instructed to turn left to 360°. The first officer acknowledged the instructions. At 2131, departure control established radar contact with the flight and cleared it to climb to 5,000 feet. A little later, Flight 1808 was instructed to proceed direct to Pease VOR and to climb and maintain 7,000 feet.

At 2137, the first officer contacted Pease Approach Control while the airplane was passing 5,500 feet and requested clearance direct Kennebunk (ENE) VOR. Approach Control initially cleared the flight to Augusta, but the captain requested his destination be changed to Auburn-Lewiston and requested ENE 036 radial transition to intercept the localizer to Runway 04. About 2142, Approach Control cleared the flight to Auburn-Lewiston via direct Kennebunk at 7,000 feet and told the flight to contact Portland Approach Control. The captain acknowledged the transmission. Three minutes later the first officer requested lower and Pease cleared them to 5,000 feet.

After descending to 5,000 feet, the captain clarified their destination with Portland Approach Control and confirmed the airplane was on the ENE 036° radial. He was then instructed to descend and maintain 3,000 feet and was provided the following Portland weather at 2153: Measured ceiling 200 feet overcast; visibility 1¾ miles, light rain and fog; winds 090° at 5 knots.

About 2200, according to the Bar


RUNWAY = 4 (AUB)
FINAL - MAIN WRECKAGE
INITIAL IMPACT POINT
0202 31 (PMW-AC) RADAR SERVICE TERMINATED CONTACT LEWIE
0202 30 (AJC808) AFFIRMATIVE
0202 27 (PMW-AC) BAR HARBOR 808 YOU'RE OVER LEWIE NOW
LOM (LEW)
0201 45 (AJC808) OKAY
0201 40 (PMW-AC) ROGER TURN LEFT HEADING 340 SHOW YOU SLIGHTLY RIGHT OF IT
0201 47 (PMW-AC) BOUT A MILE SOUTHEAST OF LEWIE NOW
0201 38 (AJC808) AH NOT YET WE HAVEN'T INTERCEPTED
0201 33 (PMW-AC) BAR HARBOR 808 YOU RECEIVING THE LOCALIZER LEWISTON
DOLEY INT
"ALL TIMES ARE COORDINATED UNIVERSAL TIME"
LOCALIZER PATH
0
5
10
SCALE IN NM

Radar data reconstructed plan view of the flight track.

Figure 1

Harbor station agent (weather observer) located in the terminal building at the Auburn-Lewiston Airport, Flight 1808 asked and obtained the following Auburn-Lewiston weather: Indefinite ceiling 300 feet obscured; visibility 1 mile, light drizzle; wind 020° at 4 knots; altimeter 30.24.

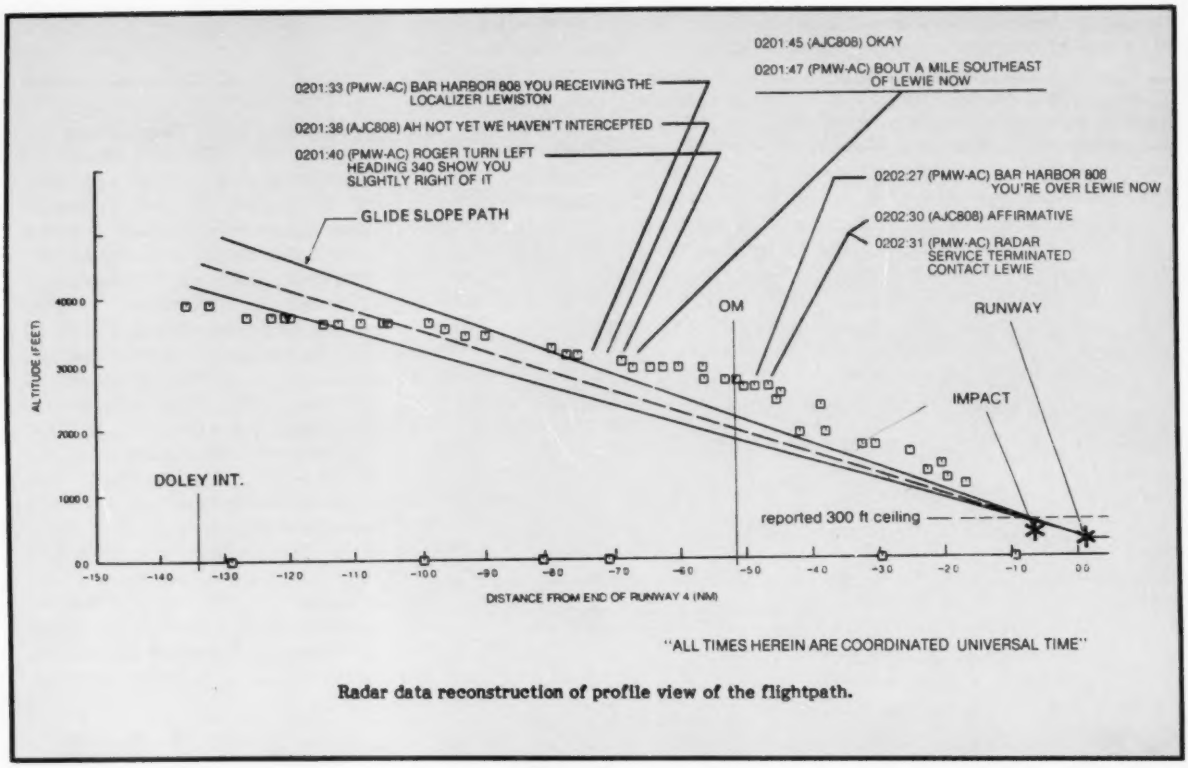
At 2201, after noticing Flight 1808 was east of course, the Portland Approach controller asked the flight if it was receiving the Lewiston localizer. The captain replied, "Not yet we haven't intercepted." The approach controller stated, "Roger, turn left heading three four zero, show you slightly right of it." The captain replied, "Okay." Forty-five seconds later, the controller stated, "... You're over Lewie now. You receiving it?" The first officer said, "Affirmative." The controller then stated, "... radar service terminated contact Lewie Unicom for advisories report missed approach this frequency or on the ground 124.05." The first officer acknowledged the instructions, and that was the last transmission from the flight. At 2213, Augusta Flight Service Station called Portland Approach and advised the controller that, about 2205, there had been an aircraft accident about a mile southwest of the Auburn-Lewiston Airport. The airplane crashed 4,007 feet from the approach end of Runway 4 and 440 feet to the right of the extended centerline.

ANALYSIS

The National Transportation Safety Board (NTSB) found the crew certificated and qualified for the flight in accordance with Federal regulations and company policy and procedures. Based on the flightcrew's flight and duty time records and information provided by family members and associates, there was no evidence either crewmember was suffering from chronic or acute fatigue. Aside from an ear problem the first officer experienced two days before the accident, there was no evidence to suggest the flightcrew's physical ability to operate the airplane might have been adversely affected.

AIRPLANE MAINTENANCE

The airplane was maintained and inspected in accordance with Federal regulations and the airline's approved maintenance procedures. The investigation found no evidence of a failure or malfunction of the airplane, its systems, or its components. However, a history of problems with the nav/comm equipment was considered



Radar data reconstruction of profile view of the flightpath.

Figure 2

a potential factor in the accident. The NAVAIDs and other electrical components in the nose compartment of the airplane were located adjacent to the windshield, so a leak in the windshield had caused problems with the nav/comm equipment. From August 1984 to August 1985, there were three discrepancies concerning water leakage through the windshield seal of N300WP. The last was reported 26 June 1985. The number one nav/comm system was replaced the day before the accident but dispayed no evidence of water contamination. However, the airplane was flying through rain at the time of the accident, so a leak affecting the NAVAIDS remained a remote possibility.

WEATHER REPORTING SYSTEM

Weather observations in the vicinity of Auburn-Lewiston and witness reports about the weather conditions confirmed the 2150 observation made by the Bar Harbor agent at Auburn-Lewiston was substantially correct. A qualified weather observer, there was no evidence he contributed in any way to the accident. The conditions at Portland are believed to be similar to those existing at Auburn-Lewiston at the time of the accident, even though a terminal forecast was not available for Lewiston.

FLIGHTPATH

The flightcrew executed an unstabilized approach, contrary to company procedures and safe operating practices. It's possible the crew may not have realized how close they were to the LOM before the controller advised them of their position. Station passage would have been indicated by the swing of the ADF needle, the blinking marker beacon light, and associated audible tone if it were selected on. The radar track and marker beacon signal pattern indicates the crew should have received the marker beacon signal. However, it appears the airplane may have already been inside the LOM and the ADF would not have indicated station passage.

At this point the airplane was 500 feet above GS intercept altitude and at 165 KIAS, 15 knots above company recommended flap extension speed. This was also 35 knots above company recommended landing gear extension speed, and the rate of descent had increased to 2,200 feet per minute. (See Figure 2.) The controller's instruction to the flightcrew to turn to a 340° heading was given considerable attention during the investigation. The turn would have put the airplane on a 60° intercept angle to the final approach course when the airplane was one mile from the LOM. During the Board's public hearing on the accident, the controller stated, "... this was just a turn, a correction to assist the pilot to intercept Lewie, south of, outside of Lewie." Although the airplane only turned 47° left instead of 60°, the turn given by the controller may have contributed to the unstabilized approach. The flight was off course to such an extent a 60° turn was needed to put the airplane on a track to the LOM and a nonstandard procedure was required to achieve this objective. In view of

this, the Board believed the controller used poor judgment and technique in his attempt to assist the flight. He also exercised poor judgment and technique in his subsequent handling of Peoples Express Flight (PEX) 391 while it was on an ILS approach near the final approach fix. He kept PEX 391 too high and on a 52° intercept heading, which resulted in the airplane flying above the glideslope. Since the PEX crew was without glidepath guidance they had to request a turn in order to position the airplane on course and on glidepath before commencing their final approach. The correct course of action in the case of Flight 1808 was for the controller to ask the pilot his intentions after the position report and offer radar vectors. Such an action by the controller probably would provide the captain with an easy alternative. Accepting radar vectors would alleviate his predicament and provide the crew an opportunity to establish a stabilized approach. However, the Board emphasized the opportunity for the captain to ask for radar vectors was always available. Instead, they continued the approach and the airplane was never established on the localizer or glideslope.

Although the crew might have made a landing, it would have been unsafe. In darkness and under existing conditions, it would be difficult for the flightcrew to recognize an excessive rate of descent until the airplane was very low. In addition, the flightcrew was probably susceptible to visual illusions because there were no other ground lights for reference in the approach zone; there was water on the windshield; and there was a slight upslope to the runway. These conditions could combine to produce a perception the airplane is higher than it actually is in relation to the runway.

To make a visual approach, a pilot must constantly interpret the changing visual scene to remain oriented on the proper glidepath. Pilots must judge height, speed, distance, and glidepath based on perceived movement of external objects, their brightness, and their apparent size, as well as their relationship to the horizon and other objects, and with respect to the airplane's orientation in space or its angular relationship with the runway. Thus, visual perception is a decision-making process based on a multitude of visual cues.

At night, because visual cues are reduced and are further degraded by weather and sloping terrain, pilots must rely to a greater extent on flight and navigation instruments to reach the runway safely. The reduced number of visual cues, such as runway and approach lights, may well provide images that can be interpreted inaccurately, causing pilots to make inappropriate decisions. In this instance, Flight 1808 could have become visual at about 1 to 1 1/2 miles from the airport. Therefore, the crewmembers would only have seen the 3,000-foot-long approach light system and perhaps the runway threshold. Without further visual cues, an illusion would be created that the airplane was too high in relation to the expected visual light scene, i.e., 3,000 feet of approach lights plus 5,000 feet of runway lights. An additional visual illusion would be created by the featureless and unlit terrain surrounding and preceding the approach lighting system. This is called the "black-hole approach," and concerns approach to a lighted runway (or in this case to the approach lighting system) over dark, featureless terrain, beyond which the horizon is not discernible. Simulated tests of both visual conditions have shown pilots tend to descend along the arc of a circle, the circumference of which touches the ground short of the runway lights. The fact Flight 1808 had water on the windshield and the airplane was maneuvering and not aligned with the runway or approach lights center line aggravated the situation.

Therefore, the Board believed the captain used poor judgment by not making a missed approach in the vicinity of the LOM. Once he decided to continue and attempted to "salvage" the approach, the crew had difficulty because the airplane was not only unstabilized on the ILS, but it was outside the LOC and GS limits. This significantly degraded their ability to determine the airplane's correct angular relationship to the runway when the runway environment came into view. The Board also believed the visual and meteorological conditions could have contributed to the pilot flying too low. Even with VASI installed, the crew probably did not see it and if they did, the system does not indicate how far an airplane is above or below the proper glidepath.

PROBABLE CAUSE

The National Transportation Safety Board determined the probable cause of the accident was the captain's continuation of an unstabilized approach which resulted in a descent below glideslope. Contributing to the unstabilized approach was the radar controller's issuance and the captain's acceptance of a nonstandard air traffic control radar vector resulting in an excessive intercept with the localizer.

APPLICATION TO MAC

On the surface, it appears the captain of Flight 1808 may have had some "help" in getting to the scene of this accident. Possible leaks around the windshield of his airplane might have caused problems with his navaids. A "nonstandard" vector by the controller may have also contributed to the instability of his approach.

These factors, however, were beyond the captain's control. He wasn't responsible for fixing the airplane. He also couldn't anticipate what sort of vector he would receive. What he could control, though, was his own decision-making process and the basic control of his airplane. He elected to follow, at least partially, a vector much greater than his experience would dictate as normal. A 60° turn in the vicinity of the LOM should have made it clear something was definitely not right and it was time to go around and try again. Basic instrument flying sense and experience should also have told him that inside the LOM, in marginal weather, is no place to play catch-up. He let events control him instead of vice-versa.

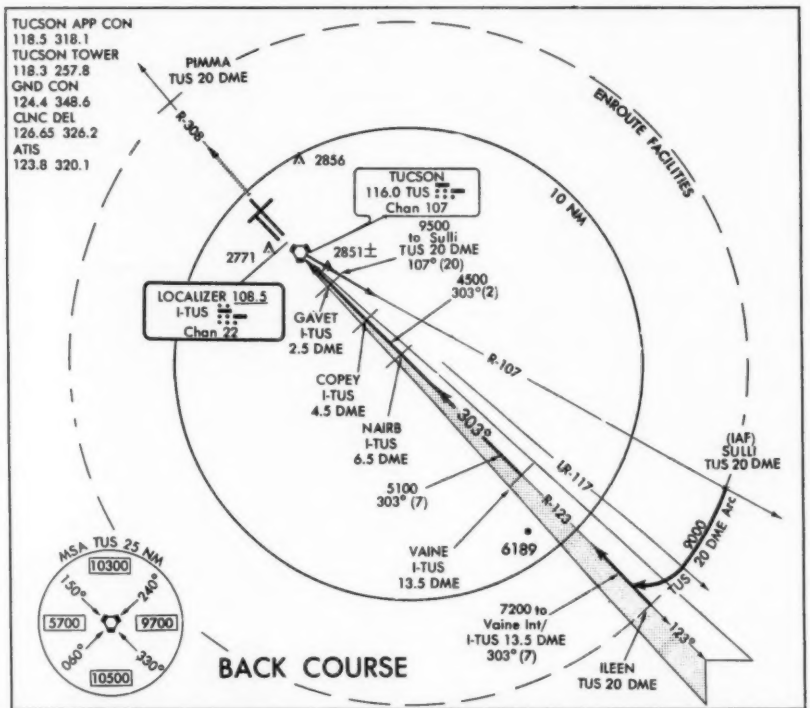
The demands of the MAC mission require each of us develop a sharp sense of the out of the ordinary; the "not quite right." The development of this sense makes up one part of what we call judgment. The captain of Flight 1808 either didn't have this sense, or elected not to use it. ✈

NTSB/AAR 86/06

TMF Instrument Quiz

Well p-a-a-a-dners, it's time to saddle-up your trusty USAF, Category A, fixed-wing type aircraft (equipped with TACAN and VOR/ILS) and head out to the wild and wooly west. That's right, little buckaroos, return with us now to those golden days of yesteryear when men were men, women were women, and justice *always* prevailed. Where better to revisit the bawdy times of the wild west than Old Tucson. (Remember Tombstone Territory?)

Well, pilgrim, if we're going to get there, we may as well mosey on over to Tucson International Airport. As a matter of fact, let's attempt the LOC/DME Back Course, Runway 29R approach. The winds are strong out of 213° at 25 knots. The weather forecast (ETA plus or minus one hour) calls for clear skies, with visibility restricted to one-half mile due to blowing dust. Ready to go? Best hit the dusty trail 'cause we're burnin' daylight.



CATEGORY	A	B	C	D	E
S-29 R	3120-1 490 (500-1)		3120-1¼ 490 (500-1¼)	3120-1½ 490 (500-1½)	3120-1¾ 490 (500-1¾)
CIRCLING	3120-1 490 (500-1)		3160-1½ 530 (600-1½)	3180-2 550 (600-2)	3680-3 1050(1100-3)

LOC/DME BC RWY 29R 32°07'N–110°57'W

205

TUCSON, ARIZONA
TUCSON INTERNATIONAL (TUS)

1. What is the minimum navigation equipment necessary to fly this approach?
   A. Localizer and glide slope indicators.
   B. Localizer only (provided the ASR is up).
   C. TACAN.
   D. Localizer and Distance Measuring Equipment.

2. If, during this approach, you lose the use of your two-way communication radio(s) you might expect to receive ATC instructions on _____.
   A. TACAN channel 22
   B. VHF navigation frequency 108.5
   C. TACAN channel 107
   D. VHF navigation frequency 116.0

3. During flight planning for this approach, you filed for 10,000 ft until reaching SULLI intersection, your IAF. You are presently on a direct course to SULLI, off the airways, in IMC. Just prior to losing *total* communications, Tucson Approach Control cleared you to descend and maintain 9,500 ft. Now that you "lost" your radios, what altitude should you maintain until you reach SULLI?
   A. 9,700 ft.
   B. 10,000 ft.
   C. 9,500 ft.
   D. 15,000 ft.

4. Assume you haven't regained radio contact with anyone, you're *still* IMC, and you intend to take no emergency landing actions; what action(s) would be appropriate upon reaching SULLI?
   A. Hold at SULLI until your ETA.
   B. Commence the approach once you arrive at your ETA.
   C. Proceed to your alternate.
   D. A and C are correct.

5. Given the weather forecast for Tucson International, and assuming this is the only approach available, were you even *legal* in filing for this destination?
   A. Sorry partner, not this time.
   B. Sure, why not.
   C. Unable to tell from the information available.

6. Just for the sake of argument, let's assume the visibility improved to one mile and you regained two-way radio communications. Tucson Approach Control has cleared you for the approach. In order for your course deviation indicator to be directional on the back course you must _____.
   A. dial-in the front course
   B. dial-in the back course
   C. dial-in 116.0
   D. dial-in channel 107 on the TACAN

7. While arcing from SULLI, enroute to the localizer course, you should have _____ tuned in your TACAN. (Assume you have only one TACAN installed.)
   A. channel 22
   B. channel 116.0
   C. channel 108.5
   D. channel 107

8. Suppose you were being radar vectored to localizer final, and further, the weatherman was correct in his prognostication (except for the visibility which is now reported at one mile). You've requested no special handling. Tucson Approach Control is *supposed* to maneuver you to intercept the localizer course at least _____ from the FAF on an intercept angle that doesn't exceed _____.
   A. 3 miles, 20 degrees
   B. 3 miles, 30 degrees
   C. 2 miles, 20 degrees
   D. 2 miles, 30 degrees

9. After intercepting the localizer course, you should have _____ tuned in your TACAN.
   A. channel 107
   B. channel 22
   C. either channel 107 or 22
   D. neither channel 107 or 22 is *required* to fly this approach.

10. What is the usable runway length for landing on runway 29R?
   A. 7,347 ft.
   B. 12,002 ft.
   C. 10,911 ft.
   D. 6,986 ft.

Well, how did you do, buckeroo? If'n ya got 'em all correct, then you're standin' in tall cotton. If'n ya didn't, time to circle the wagons and spend a little extree time lookin' at a few of those *weird* approaches before one of them unexpectedly reaches up and bites you where you sit. As for us, well, we're about ready to strap on our chaps, buckle our spurs, and disappear into the golden sunset of the southwest. See ya again in a month or so. Hi Ho Silver—away!!

THE ANSWERS

1. D, IAP
2. D, IAP Legend
3. C, Flight Information Handbook
4. D, Visibility isn't sufficient to fly a fixed-wing approach (and surely you filed an alternate due to low visibility).
5. A, IAP
6. A, APM 51-37
7. D, IAP
8. B, APM 51-37, pg 100
9. B, IAP
10. B, IAP

Flight safety would be an easy task if we all flew . . .

Error-Free Performance

by Lt. Col. Kenneth Boley, ARNG Liaison Officer
Army Safety Center

We all know, given error-free performance, most rules can be bent without large increases in accident risk. In aviation, we have manuals, pubs, and regulations that tell us exactly how to do our job. Most of this paper was generated to describe and limit the risk factor involved in accomplishing the mission. If we complied with this guidance 100 percent of the time, accident rates would probably only be attributable to materiel failure or design deficiencies, with only a small percentage charged to crew error.

Historically, however, human error has accounted for 70-plus percent of our flight mishaps. Operationally, these factors include overconfidence, overmotivation, low proficiency, and poor technique. On the maintenance side of the house they include poor supervision, failure to use by-the-book procedures, and lack of knowledge. All of these can be lumped into one broad category called poor discipline.

The kind of discipline involved here is not blatant disregard of the regulations and procedures, but something potentially far worse. This poor discipline is the subtle, insidious breakdown of good order and common sense that begins not with the individual who gets caught making the error, but with the commander or first-line supervisor who provides tacit approval for violations. Unfortunately, our losses due to breakdown in discipline tend to mask other human errors and prevent the appropriate corrective actions from being implemented.

By not acting decisively when faced with minor variances in policy, commanders and supervisors promote deviations in practice which eventually become "unwritten policy," more commonly referred to as the old "well, that's the way we do it here" syndrome. In some cases, deviations in practice are even *encouraged* by commanders and supervisors for the sake of mission accomplishment. Soon, the approval to "do it this time" in order to get the mission accomplished, or whatever pressure seems important at the time, becomes standard practice. Allowed to do it once, the individual figures it must be all right to do it in other areas. In short, we reward the individual for being able to get the job done and no one questions the means to that end.

For instance, a helicopter participating in a field training exercise encountered marginal weather. The pilot decided to try and make it over a ridgeline into a valley. The aircraft hit trees on a slope and crashed. Pilots in

the unit had been operating in similar weather conditions for some time and, on numerous occasions, would search around until finding a hole through the weather to complete their missions. Each time a pilot stretched performance to the limits or deviated slightly from regulation requirements and was not admonished for his actions, command-level safety emphasis was degraded. The result—such practices became commonplace and the accolades for such an approach to mission accomplishment overshadowed the unsafe manner in which they were accomplished.

Another helicopter, flying at an estimated airspeed of 80 to 90 knots and 150 feet above ground, hit and severed two telephone wires. The pilot lost control of his craft and the ensuing crash killed him and his passenger. Prior to this mishap, the pilot's detachment commander repeatedly emphasized the dominant consideration in mission performance was keeping the supported personnel happy at any cost. He was aware of, and consented to, scheduling of his pilots on single-pilot missions when they had received no special or refresher training for the terrain involved in supporting this mission. Morale in the detachment was low and behavior was undisciplined.

When an accident occurs, we ask ourselves questions like "Why didn't he follow the briefing?" or "Why was undocumented maintenance performed?" The truth is, it was not a spur of the moment decision on the part of the individual, or even simple human error, but rather the individual had seen or had done a similar action before and nothing happened. Since he didn't have an accident and was rewarded for getting the job done, his actions were perfectly acceptable. If we don't like the rules, let's change them . . . not bend them. ★

courtesy of Army Flightfax

Squawk, Braup, Gweep!
Rhrhap, Ecep, Cooh oo!
TRANSLATION:
"Well Tommy, it's mighty civil...
"What ever gave you a correct idea like that, Burnt-Beak?...

Bird Research

We were there!

by Capt. Donald L. Rosenberry
Associate Editor

(Editor's note—About the only reason we human beings (HBs) ever consider the natural flying creatures in our aviation endeavors is the frequent, and often traumatic, in-flight meetings we and they have. Considering these "meetings of the minds (and bodies)" occur at the startling frequency of some thousands of times annually, it's a topic worthy of serious attention. Typical of aviation and other things lifelike, the bigger the bird, the greater the impact. The tally on bent, broken frames, anguish, injury, and sometimes worse, is high on both sides.

Consequently, we have a special group of folks dedicated to the resolution of this avian-aviator conflict—the USAF Bird Aircraft Strike Hazard (BASH) team. Working out of HQ USAF, Bolling AFB, DC, (note the change in location) with the office symbol LEEV, the BASH team is the AF expertise on fowl deconfliction. They usually correspond via carrier pigeon, but have acquiesced to having a telephone installed for more conventional communication. If you've got bird problems (seemingly unsolvable or merely beyond local means) call them! And while we're speaking of bird problems, if you're going to have them, this is a likely month for it.

Our aforementioned wizards-of-the-winged have done considerable research and conclude April is the second busiest month for bird movement, edged out only by October. This being the April edition of *TMF,* it seemed somehow appropriate to include an article on birds. Naturally, we

prepared the usual high-quality, four-page article replete with awe-inspiring statistics, pie charts, and bar graphs. But at the last minute an ominous-looking package came in via Hawk express, labeled only "Bul." After the usual water bath (just a precaution), we opened the box. Hidden inside the packing, made of an unusual combination of dried grasses, straw, feathers, and other unidentifiable matter, was a video disc recording from Yore AFB. We had our experts on it immediately and have produced the following transcript, since "aviese" isn't such a popular language these days. Obviously the laser light effect is lost, but the message is intact. It seems to be a hush-hush, super-secret meeting between the infamous Tommy, the Two Fisted Zudzucker, and Barney, the Brown Eared Bul Bul! Lights! Roll 'em!)

"Well Tommy, it's mighty civil of you to let me come chat with you again. I was beginning to think you didn't like me."

"What ever gave you a correct idea like that, Burnt-Beak? I presume your alleged ability to write hasn't left you just yet?"

"Of course not! Let's begin. I understand you've a plan of attack for the large ones who invade our skyways, destroy our mid-migratory respites, damage our population enhancement grounds, and generally cause considerable lifelong discomfort and inconvenience?"

"Now I remember why I was so upset when the editor of *The Avianquirer* recommended you to publicize this incident. Try to keep this normal, won't you? About the HBs. We've experienced a bit of their 'culture' so heinous we simply must spread the word. Just three days ago, right after Linda, the Long-Legged Leaper left the Aqua-Twirl competition with Charley the Chunk-Winged Curl Caller, they closed in."

"Oh, they went back indoors, eh? I knew they couldn't handle the outdoors. But we're tough, we . . ."

"Slow down, Gristle-Brain. I'm talking about stealth here. Who'd have thought they'd have the mental agility to wait 'til we were all preoccupied and then sneak up on us? They waited until I was right in the middle of presenting Debby, the Deep-Diving Darling the award for 'Best of Form.' Then . . . Wham!"

"Wow! They took advantage of our cumulative appreciation for dedication to refined movement—how crass! I suppose everyone was focused on . . ."

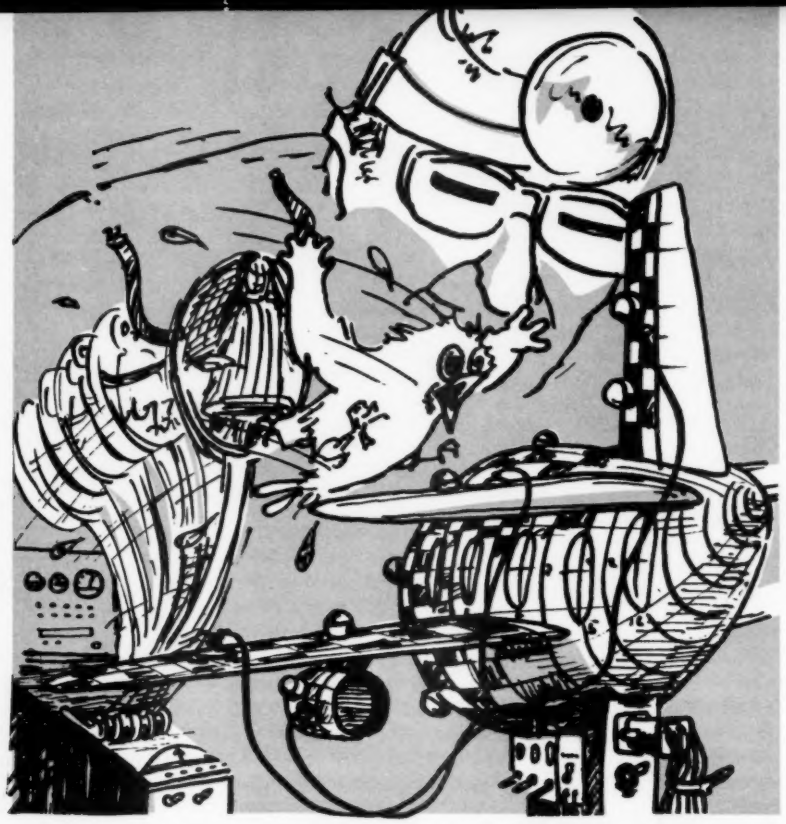
"Riveted to the presentation. She has quite a stage presence, you know. Anyway, before Clem could even sound the alarm, they had this huge net over almost everybody. I saw the net coming, so I grabbed Debby and launched down and backwards."

"So, you escaped unscathed, eh? Good show! So what's the point to all this secrecy and . . ."

"You weren't even there and you show results of severe scathing, but no, we didn't escape. We eventually had to come up for air, and that's when they grabbed us. It was a . . ."

"Ah, took refuge in the pool, pretty smart!"

"What pool, we were under the stage. Now, as I was saying, it was a horrible experience. First they grabbed us in their filthy digits and stuffed our heads into bags! They tied our feet and



unceremoniously tossed us into a large device that gets very excited and makes all manner of noise when an HB crawls inside its head."

"They call it a truck."

"I thought it was designed for flattening worms before drying . . . whatever. The trip would have been beyond description, all that jostling and feather-to-feather contact, if they hadn't tossed Debby in on me."

"What would they want with all of you? There were so many different land masses represented, certainly no consensus of opinion was likely. If they desired a group discussion, the least they could have done is forward a formal . . ."

"They were trapping us like common worms, for *experimentation.*"

"Excuse me. Are you saying you have documented cases of . . . of . . . Bird Butchery gone unpunished!?"

"Right with it today, aren't we, Pinhead? As I was saying . . ."

"I feel woozy, if this is going to be explicit, I better . . ."

"That appears to be your normal state. But don't worry. What Debby and I did will remain a secret. Besides, I can't imagine you being queasy. You read your own articles, right?"

"Uh, right. So, what happened next?"

"Well, right off the human they separated us, threw us into little cubicles, and they didn't even remove the bags. After a few hours of semi-isolation, we *could* still communicate, they came in to 'feed' us."

"Sounds pretty humane, er, aviane to me. Darn neighborly I'd . . ."

"Let me continue, or I'll reveal your preference for plastic perches. They brought in this, ulp, mixture of putred insects and mashed bean sauce and put it on the floor. At first I thought they intended to determine how long I'd be able to stand it there without pushing it out o' my cubicle. But nooooo. A few minutes later this HB grabs me by the throat, forces open my beak and . . . *WRETCH!* Excuse me it's just too revolting to remember that slime in my beak."

"But I *like* bugs and meal mash."

"Shaddup, Trash-Gullet. You disgust me! I had specifically ordered one of my favorites for two, the braised salmon smothered in soy sauce. But now I may never even be able to think of that dish, the association is so strong. Anyway, after that humiliation, I was weak, but still alert. I could hear Phil screamin' next door, then I realized it was his turn."

"So who'd he feed?"

"I can't believe you can fly, as dense as you are! I was the next victim. I listened as the brave soul gave us a play by play of what was happening, to let us know what we were in for. They strapped him to a spoon-shaped device, then, in one swift motion, they remove his blindfold and launch him into the air, right at a miniature scale model of one of those stilted unsocial HB metal birds. Poor Phil. He couldn't adjust and just kept bouncing off the fool thing. It must have really entertained those unavian beasts, they kept doing it 'til he was too confused to speak anymore."

"Addledpated, eh?"

"Slap yourself, Barney! What kind o' language is that? Have you no respect? The poor bird was so bad off he almost sounded like you. Anyway, *if* I may continue, I was next. Fortunately, thanks to Phil, I knew what was in store. They tried the same thing on me, with one exception. They forgot to turn off the lights on the little model. No sweat! I could clearly see the ridiculous creature, and even at some pretty high launch speeds, I just dove out of the way."

"What, you did the same thing every time?"

"Right, Meatface. Just like I teach all my friends, it's like this. If you happen to come upon one of them metal cans when your're out cruisin' the

main—dive! First of all, the cans are completely unpredictable, so it's a 50-50 proposition on what it'll do. Second, those cans seem to make such a big deal out of approaching the ground, always draggin' it out for a long, slow approach to them huge worm jerky manufacturing sites."

"I told you before, they call 'em runways!"

"Raise yer voice again Barn, and I'll send you to the HBs for research, that'll skew the mean a bit."

"So that's it? Then they let you go?"

"Not quite. Seems they hadn't had enough fun. They decided, from my performance, that lights on the cans made them easier to avoid and rapidly disbursed the information throughout the HB world. But that wasn't enough for 'em. They wanted to do 'stress tests,' to figure out exactly what *kind* of lights are most effective. So one by one, each of the folks from our Strut-N-Crow audience were strapped to a chair. They placed electrodes all over 'em and then started. They'd flash bright lights at 'em, then dim lights, then colored lights, at first it was pleasant, almost like the light show down at the fish-n-brew emporium."

"Oh! Kind of a reward for your participation, right? I knew . . ."

"Hold yer tail feathers, Bul. Next they brought out lasers. We were happy at first, you know how pretty the laser light shows are, but this was different. They started aiming the high intensity beams right at us! Severely irritated Rachel's right eye, the scum. It was grim I tell you, but we caught on early. Knowing they were going to do their worst, we plotted to keep 'em civil despite themselves. They didn't seem to be able to understand us, or they were so cocky they figured what we said to each other didn't matter. So we supported each other during the trials, making sure to show no reaction to those things most dangerous, i.e. the lasers. We wanted them to conclude regular old lights, of whatever frequency was the right answer. It'd be helpful to us, cause we can see the cans from farther away, without being hazardous. Course, I'm kinda partial to strobes, so the crowd supported me and we managed to convince them pulse rates somewhere between 400-600 per minute were best."

"How'd you do that?"

"Actually, Slim is probably most directly responsible. He put on a show that would have aced the Strut-N-Crow when they dropped the pulse on him."

"After all that terror, did you get a courtesy copy of their report?"

"What 'courtesy'? I'm beginning to understand yer terminal singleness. Jeb managed to sneak out a copy in his beak, those pelicans are crafty folk. But the material is so blatantly obvious, I kept it from the others involved. Knowing what they had to go through for this might be too much for 'em. Here are a few profound excerpts:

'It is known many birds do attempt to actively avoid aircraft, although it is not known precisely what causes the avoidance reaction.'

Do you believe that? I think we should run their heads into a metal container a few hunert times and see if they start ducking!

'If this is true, then it is argued that lights can only serve to increase the visibility of aircraft and allow birds more time to react to oncoming planes.'

They also say something about the FAA recommends use of landing lights below 10,000 feet, and wherever flocks of birds might be encountered."

"What's a FAA?"

"You're so slow of mind. That's their equivalent to the Supreme High Feather, who perches ready to come to the aid of all fellow fowl in times of need. She also sets up our rules for flight, which explains why we aren't allowed to fly randomly on the migration routes."

"Gee, I always thought that was some instinctive drive."

"Nope, it's all spelled out right here in the Feathered Airborne Routings (FARs) which we must all read and heed for safe flight. Now enough of this, let's relax and . . ."

"But you still haven't explained how you got away from the HBs!"

"Oh well, it was pretty simple. They went to grab Debby for the 'Feedin' and I lost control. I had recovered from my experience quicker than they expected, and wasn't bound. I came in low, then climbed sharply and launched a little 'personal relief' at the HB holdin' her. He was so affected he fell backward, knocking all the cubicles over. At that, we all took off in unison through the door as the other HBs rushed in to see what was going on."

"So that explains the new locale!"

"Right, now hand me another Toenail Curler and let's kick back and watch the next competition."

(Editor's note—There you have it, right from the horses', er, bird's beak. Keep those lights on below 10,000 feet and be aware most birds dive when a collision seems imminent. And if you happen to see a large bird wearing Ray Bans, Thongs, and greased down with coconut oil, honk! It's Tommy, the Two Fisted Zudzucker.)

Flying-Hour Milestones

15,000

CMSgt James Farriba, 315 MAW

10,000

CMSgt John L. Gaia, 155 TAS
CMSgt Erwin Huelsewede, 1 MAS
CMSgt William Killian, Jr., 41 TAS
CMSgt Kenneth F. Thompson, 4 MAS
MSgt Otie K. Lambert, 459 MAW
MSgt Arnold L. Oestreich, 86 MAS

5,000

Col David R. Harrington, 459 MAW
Lt Col John P. Allan, 20 TAS
Lt Col Walter A. Bala, 1 MAS
Lt Col Daniel L. Boesz, 459 MAW
Lt Col John P. Clements, 1 MAS
Lt Col Geoffrey L. Collins, 185 TAS
Lt Col James M. Cook, 4 MAS
Lt Col Jon S. Gingerich, 302 TAW
Lt Col Jessie E. Glisson, 1 MAS
Lt Col Howard E. Hess, 459 MAW
Lt Col Linville L. Holley, 155 TAS
Lt Col Roger T. Hughes, 1 MAS
Lt Col William E. Miller, 94 TAW
Lt Col David M. Mills, III., 302 TAW
Lt Col Michael J. Pasquale, 7 MAS
Lt Col George E. Wilson, III., 155 TAS
Lt Col Kurt J. Wisecarver, 1 MAS
Maj Gary R. Cave, 4 MAS
Maj O. E. Chastain, 20 MAS
Maj Sheridan Chitambar, 758 TAS
Maj Michael J. Coffey, 459 MAW
Maj Robert L. Glendening, 459 MAW
Maj Freddie M. Hegler, 815 WRS
Maj Steven M. Henman, 20 MAS
Maj Girard Hoffpauir, III., 1 MAS
Maj Donald M. Jackson, 1 MAS
Maj James W. Johnson, 1 MAS
Maj Robert H. Johnson, 20 MAS
Maj Dale L. Larson, 1 MAS
Maj Robert C. Melrose, 185 TAS
Maj Patrick J. Miller, 1 MAS
Maj Kevin A. Murphy, 1 MAS
Maj Scott R. Nichols, 459 MAW
Maj Steven A. Seats, 310 MAS
Maj Robert M. Silver, 1 MAS
Maj Richard D. Stout, 302 TAW
Maj Randall W. Young, 459 MAW
Capt David B. Ingersoll, 1 MAS
Capt Victor A. Puleo, Jr., 4 MAS
Capt Richard G. Weidner, 86 MAS
CMSgt Michael M. Welch, 76 MAS
SMSgt Robert W. Harrison, 459 MAW
SMSgt Leon F. Jackson, 41 TAS
SMSgt Paul R. Oliver, 459 MAW
SMSgt Scott D. Rearich, 41 TAS
SMSgt Charles N. Reece, 4 MAS
SMSgt John D. Timko, 1 MAS
SMSgt William C. White, 155 TAS
MSgt Phillip J. Brown, 1 MAS
MSgt Jimmy L. Bryant, 459 MAW
MSgt Alberto Campos, 68 MAS
MSgt Benito Depasopil, 14 MAS
MSgt Arthur D. Gee, 4 MAS
MSgt William P. Geyer, 758 TAS
MSgt Don G. Jenkins, 4 MAS
MSgt Franklin P. Laning, 459 MAW
MSgt William F. Moore, 1 MAS
MSgt Howard E. Sargent, 143 TAS
MSgt Alan K. Soderstrom, 1 MAS
TSgt Arnold L. Aubrey, 6 MAS
TSgt Larry C. Battle, 1 MAS
TSgt John P. Brown, 1 MAS
TSgt Steven G. Estelle, 1 MAS
TSgt Dennis F. Johnson, 14 MAS
TSgt Ernest B. Jones, Jr., 435 CSG
TSgt Gilbert L. Mitchel, 4 MAS
TSgt Kevin T. Roberts, 731 TAS
TSgt Arthur W. Schlussel, 1 MAS
TSgt William L. Smith, 76 MAS
TSgt Leon A. Vann, Jr., 86 MAS
SSgt Craig A. Cox, 4 MAS
SSgt Donald Fleischhauer, 1 MAS

2,500

Lt Col Russell J. Spahr, Det 2, 67 ARRS/CC
Maj Jerry L. Garlington, Det 6, 40 ARRS/CC
TSgt Richard R. Bobo, Jr., Det 2, 67 ARRS

Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award.

Safety Workhorse — *The FSO*

What do we spend *most* of our time writing?

by Lt. Col. Michael G. May and
Capt. Donald L. Rosenberry

Welcome to the fourth installment of our exceedingly helpful and informative series. It's time for one of the biggies, folks. Time to get down to the grime and grit of safety reporting. For you FSOs, this is when we talk about the reporting you will become most deeply involved with, as opposed to reporting you spent your time in California studying and refining. For you non-safety-AFSC crewmembers, stick around—we're going to discuss some of the realities of flight safety reporting. We hope to point out the rationale behind the sequence you initiate after you file a report documenting one of the items in Chapter 8 of the MAC 55-series regulations. We've got a few limiting ground rules on this month's edition though, and here they are: We aren't going to rehash all of 127-4, only the parts we want to (ze power of ze pen!). Also, we'll be concentrating on Class C flight mishaps, since for most of us, they represent the bulk of our flight safety reporting. This part of flight safety programs may be the least understood. Consequently, the investigations required can raise suspicion and fear all-around, which doesn't make the task any easier. This needn't be. Despite the necessary voluminous detail of the governing regulation, AFR 127-4, the concept is rather simple and straightforward.

We investigate mishaps for one reason—*to find cause so we can prevent recurrence.* That's the substance of this whole set of procedures. So why all the fuss? Because, without an incisive, standardized approach to mishap investigation, we're likely to use as many different methods as there are investigators. Of course, there is room for individual technique, but all the basic squares have to be filled, and the regulations provide a failsafe checklist to make sure they are. It gives us the ability to make sure all the right people have access to information we, as investigators, might not even realize is significant. Unless you're exceedingly bright, with an encompassing knowledge of all areas of operations, logistics, transportation etc, etc, the best advice we mere mortals can pass along is—follow the guidance devoutly. Besides, if you do, you've a great "out" should an alternative option also be acceptable (and preferable to someone senior to you). This brings up a clever point — mishap investigation can be awfully lonely without a current up-to-date copy of the infamous AFR 127-4, replete with additions from all appropriate parent units. Enough lead-in! Let's get started, and we might as well begin with the who and how of safety report use.

There are some excellent reasons for limiting use of safety reports. For Class C reports, the part most often needed is the promise of confidentiality. This is the safety officer's silver bullet. Without it, you haven't the proverbial snowball's chance of getting all the information you must have to get at root causes of a mishap. Protect it. Don't post unsanitized mishap reports on bulletin boards and don't include them in flight safety mishap meeting minutes. But the most important part is to avoid the "hammer syndrome." If the witness/participant feels you're the

tribunal information gatherer, the frank and open exchange of information is down the toilet. This can be quite a challenge, since rarely are you the only one concerned with what happened and why, and you may in fact be questioned on your findings for other than mishap prevention purposes. To those outside of safety asking for information, we recommend respectfully advising them of AFR 127-4 requirements as well as reasons for the promise of confidentiality, and suggest they appoint an investigating officer under provisions of AFR 120-3 or AFR 110-14. This shouldn't be an arrogant refusal to cooperate, but a professional approach to safeguarding what might be one of your most valuable tools. The interview is an investigative tool that can provide lots of information. Without it, just getting the facts becomes a costly proposition in time and money (compare the cost of having a Flight Data Recorder interpreted versus asking the crew what happened). Okay, jumping slightly ahead, you've figured out the chronology, now you want to know the extent of damage, undoubtedly ascertained by maintenance professionals.

Once you determine an event resulted in damage requiring formal reporting, the report's classification is secondary. Prevention is based on the concept that mishaps result from a chain of events. If the chain remains unbroken, a mishap occurs. The resulting price tag serves only to focus the interest of a larger or smaller circle of interested parties, an understandable result. There is a reason for classifications; they guide our actions to include detail and formality in the reporting procedure, so evaluate them carefully. In fact, one of the first items to evaluate when an "incident" occurs is extent of resource loss. Safety usually gets involved determining extent of loss. Estimate the mishap's dollar cost using the best available information. Keep in mind the safety regulations provide for revisions based on more accurate information, which is a subtle acknowledgment you won't always know the cost by the time the report is due. But for mishap prevention efforts, dollar value isn't the overriding concern.

In a sense, you can consider all mishaps equal in cost. That's because today's Class C could be tomorrow's Class A. Causes of Class A mishaps are rarely more extravagant than causes of Class C mishaps. For this very reason, we must pursue all mishap investigations with the energy necessary to find answers. Any one might be the precursor to a major catastrophe, and trying to predict which one is a risky effort indeed. So how does one figure out which ones justify the time and expense necessary to investigate? Well, nobody said this was gonna be easy. A good yardstick is the potential for mishap recurrence, an exercise in risk analysis. But once we decide to investigate, if we fail to find root causes, or we allow ourselves to be satisfied with symptom identification, we've wasted our time. As we said at the outset, this isn't a course in investigation, we don't want to bore you experts, so we'll stick to the paperwork side. However, we can't resist plugging the very useable portion of AFR 127-4 on investigations (found on pages 31-34.3). As we all know, by the time we get to the paperwork, the intense portion—the actual investigation, is history (for the final, that is). So let's chat about mishap folders, shall we?

Once again, the ubiquitous MAC Form 151 rears its head. Its most important function could be helping you order your approach to investigating mishaps. It's a convenient place to record information about the investigation itself. Considering how busy the leading edge of investigations are, it's also a good place to have others jot down information they get for you while you're out beating a different dusty trail in search of root causes. The goal is to keep all facts pertaining to the incident in one place so you can filter them, find relationships, determine the cause, and the fix.

Okay, Smerlock, so you've finally figured the whole thing out. The butler murdered the maid in the kitchen with a wrench. You've done a fine bit of work, but now you must pass on the results of your investigation to the rest of the world. Enter the message report. Fraught with opportunities to excel; writing, coordinating, and sending one of these beauts can be the most harrowing experience of your tour in safety. To help you with this, we've pooled our considerable experience with the message format and cross-checked it with many others, and we've finally found it. The fastest, most reliable means to an accurate message report is: Follow the format in AFR 127-4, step-by-step. Whether it's the first time you've ever done one or the three-hundredth time, it's still the least painful method of all. Certainly there's nothing wrong with having certain items canned in the ol' word processor, but the only failsafe method is to check everything by the reg, starting with the addressees. It really doesn't take that long, and knowing you've got the right ones up front makes the process feel a lot better. Trying to find a labor saving method to prevent having to check the table will require more effort than using the table. After you get the addressees straight, we get to the subject line. Once again, if you turn to page 4-8b of this ever-available compendium, you can't go wrong (barring typos and judgment calls). The same is true all through the format, it can be as easy as filling in the blanks, if you read the instructions. Then we come to item 9, "Narrative Description."

The first sentence of this block is supposed to be a capsule version of the kind of mishap being reported. Here, self-control is in order. Try to resist a line like "Crew door jammed" as a lead-in to a hard landing after which the aircraft departed the paved surface, coming to rest in a ditch, thereby jamming the crew door. It's cute, but not in order. Once past this hurdle, you're ready to describe your investigation. There you sit, pen poised over parchment and suddenly—you draw a blank. How do we write up our narrative? Try this format out for style (it has worked well for many). First document those areas you've analyzed and found definitely not a factor in the mishap. This can sure save on a lot of questions. Next, describe those events which weren't a factor in the mishap, but deserve a little amplification, along with the explanation. (i.e. Weather—Although the ceiling was 300 ft overcast, they were in the clear above when . . . .) Finally you get to list the events which really were factors in the mishap. You've allayed all fears of extraneous factors and you can concentrate on the meat of the issue. By the way, this includes maintenance factors, even though they'll appear in checklist form in item

ten. It's best to list the factors in chronological order, since that's the way they happened, and it'll help in the findings section later in the report. Now that we've spent this much time on factors, this is probably as good a place as any to chat about the term itself. What are the events we consider "factors?"

The book (AFR 127-4) says they are "an attempt to explain why causes . . . occurred." Another way to look at factors is this: They are the events which shaped actions you identify as causal in the mishap sequence. For example, the cause may be "The pilot did not extend the gear." A factor would be his preferential attention focused on an engine overheat warning light. The warning light didn't cause the mishap, but the distraction definitely was a significant factor. Item nine is usually the longest section of the message, for good reason. It's here we display the "behind the scenes" analysis which led to identifying findings. Having briefly discussed item 10, we're now at item 11—findings.

Never has so much anguish gone into such a small portion of a document as that expended in findings, recommendations, and causes. No small wonder, we suppose, as 127-4 says "The most important part of mishap investigation is developing findings, causes, and recommendations." Well, at least there's no pressure, right? So let's make this one of those occasions to review the little beasties a little more closely. Findings, we discover, are the conclusions of the board. In the case of Class C mishaps, you are the board. So what do we mean by "conclusions of the board?" For further clarification, we call findings the significant events or conditions leading to the mishap. This is your chance to shine. You get to decide what is and isn't "significant."

There are a number of situation specific guidelines (for which you might want to read page 35 of AFR 127-4) but in general, you need to determine where to start. There's no perfect definition of beginning and end to the mishap chain. While it's clear the birth of the pilot may be too far removed from the incident to be a finding, how well the mishap pilot slept two days earlier might not be. This is what you get all that extra FSO pay for, deciding where to start. Once you do, you form a chronological account, with each finding a clear statement on a single event or condition. If you can't pinpoint a particular event, but you know it had to have happened, state it that way in the sequence. (At an undetermined time between engine start and loss of thrust . . . .) After you get the whole chronology done, (and it must continue through all damage and injury) you can evaluate them for causality.

So, what is a "cause?" The easiest definition is paraphrased from the regulation. A cause is a deficiency which, if corrected, would likely have prevented or mitigated the damage or injury. If you did the findings right, this part will be easier. You'll have all the events in the chain listed, now you have to pick those findings that, if not present, would have prevented or mitigated the damage or injury. One way to do this is to read through your findings, eliminating them one at a time. Each time you find such a removal would prevent the mishap altogether or would alleviate the damage or injury, you've identified a cause. Having said that, it's time for magnification. Yes, it's true that if Congress hadn't appropriated funds for the weapon system, the mishap wouldn't have occurred, but that is not a causal factor in this mishap. Known as the "But if . . ." syndrome, it's a plague on the mishap reporting sequence. A cause is where the buck stops; in law there's a concept known as "last clear chance . . ." which could apply here, in a modified form. It refers to the last human in the chain who could have affected the mishap outcome, either through action or omission. It may sound like head-hunting, but the truth is there's a human being at the root of every mishap cause, it's just a matter of proximity and reasonableness (Some person decided what thickness metal to use, but in a given number of parts, there is a variance in actual vs predicted reliability. We assume risk beyond an accepted safety margin.) If you get to the point where the last human being whose action or omission was the aircraft designer or part manufacturer, you're safe to chalk it up to materiel failure. The idea is if you look for the last person in the chain to affect the mishap via action/inaction, you'll find a cause. Often it's deeper than the last person (his/her action may have been predicated on another's, etc.), but it's still your best starting point. Judgment rules in this area. This leads us to the next part of the report—preventive action taken, planned, and/or recommended.

Two of the three are fairly self-explanatory, just list the significant action taken or planned to prevent recurrence. On to recommendations. One simple, but often neglected, point is not every cause must have a recommendation. In fact, if you don't have a recommendation, so be it. This requires a little closer look. Recommendations are actions which will likely prevent the same or similar thing from happening again. But there are caveats. The recommendations must be feasible (there goes "buy new aircraft"), and they must be related to the causes. There are other avenues to employ those clever solutions you discovered which aren't related to the cause of the mishap (see AFR 127-4 para 12-14 as supplemented). A final note on recommendations, don't include the "Brief all . . . statement." That's a given, and it's the reason for the report—to disseminate the information, so you don't need to recommend it in the report. (It's like handing someone a book they asked for, and then suggesting they read it.) And that pretty much wraps up the mishap investigation segment. As a closing note, let's talk timeliness.

The best time to get all the information for a mishap report is immediately after it happens. Like everything else, the longer we wait to work on it, the more difficult it becomes. Yes, there are provisions for preliminary, supplemental, and final reports and they shouldn't be exceeded, but we don't have to follow them to the letter. We don't have to wait 30 days to put out a supplemental report, and if you can get the information faster, do it. Time spans are there for situations beyond our control (like info from outside sources), so launching a prelim and then suspensing the file for 26 days probably isn't the most efficient method of investigation. Your workload will set your ability to pursue the investigation, but alacrity is the name of the game, since your problem may not be "an isolated incident."

So close and yet . . .

The Story of Pokey 55

by Maj. (Dr.) Benton P. Zwart
USAF Clinic/SGP, Zweibrucken, Germany

"Uh, Zweibrucken Control, this is Pokey 55 turning final for Runway 21. Say again the weather."

"Roger, Pokey 55. Winds are 25 gusting to 35 out of 280. Visibility is 2 miles."

"Well, heck. That's been the story of our day. Bounced around from Bentwaters to Sousterberg, delivering cargo. "It gets there on time, or ya don't pay a dime," we always say. MAC is the scheduled airline, you know. It's just that none of us could figure out why, after being diverted into Rhein Main, the ground crew asked us "Hey guys, what are you doing in here today?"

But anyway, this was it. The third try at putting down at our home base at "sunny" Zweibrucken, Germany. The sun had just about gone down, and we were being bounced around like billiard balls in the back of our little Sherpa. Weather conditions had been like this for the past 45 minutes, and everyone was trying not to think about what they had for lunch.

"It's a good thing there aren't any pax on board." the Flight Mech said. "We'd be diggin' out the barf bags for sure by now!"

"I said something about NASA's vomit comet. Nobody else said anything over interphone, and I noticed the Flight Mech was holding onto his console quite tightly. The first approach had gone nicely. A little rough on downwind, but once we descended under the scud on final, things seemed to smooth out a bit—right until we crossed the threshold, that is. A wind shear scooted us 60 feet left of runway centerline, and we bought our first go-around. Our second try was similar to the first, except this time when we tried to put the plane on the ground, it wanted to stay airborne! I haven't felt a plane balloon like that since I flew a J-3 Cub into a 30 MPH headwind.

"So, 45 minutes to the end of crew day and we were *going* to make it in. Third time's a charm, they say. Engines spooled down on final, 1,500 feet and suddenly we were falling!

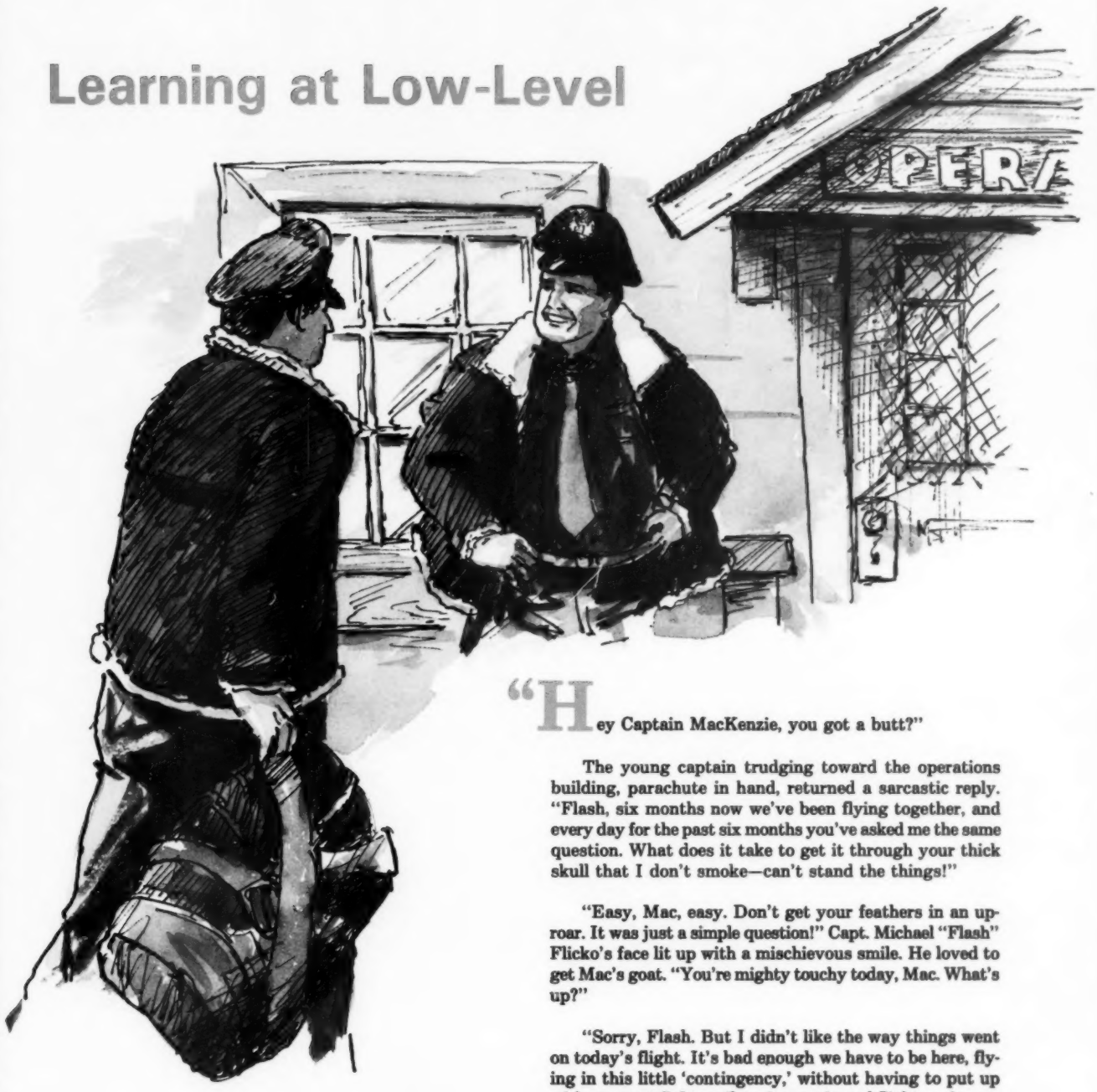
"Damn! We must be on the back side of a microburst!" The pilot rammed the throttles forward, but there wasn't enough time left. Runway behind us, altitude above us and all that . . . .

"Get-home-itis, fatigue, macho, channelized attention all could have been found in our mishap report. *Fortunately,* this flight crew was better than that. After the second aborted landing, with thoughts of where we could go if our alternate was similarly weathered in, the crew diverted to Ramstein AB, 25 miles away. The landing was silky smooth, and our little Sherpa got to spend the evening in a hangar, while the transportation folks drove us back from Ramstein to Zwei. We were still around to enjoy the scenery.

Each situation is different, and there are always a lot of "what ifs," and temptations to stretch things *just* a little more. But the "old sticks" say if you play things smart, you'll most likely get to play again. Our AC probably made his decision to divert several years ago in flight school, or maybe after reading about someone else's near-mishap. All he needed was the time, place, and conditions which required the decision, and the deed was done. I'm glad our crew had the professionalism to implement that decision over the other pressures to get the plane home. Thanks for the ride guys! I'll fly with you anytime!"

(Editor's note—Dr. Zwart's story gives us the opportunity to solicit future articles from our flight surgeons. Doctors, your unique vantage as crewmembers *and* physicians is ideal for anthropometric, physiological, and straight-up medicinal perspectives we mere mortal editors probably won't ever see. If you've got a good story with a safety or aviation-minded preventive medicine message we aviators can benefit from, lay it on us! If you're tired of repeating the same lines year after year—let us flap our collective pens instead.)

Learning at Low-Level



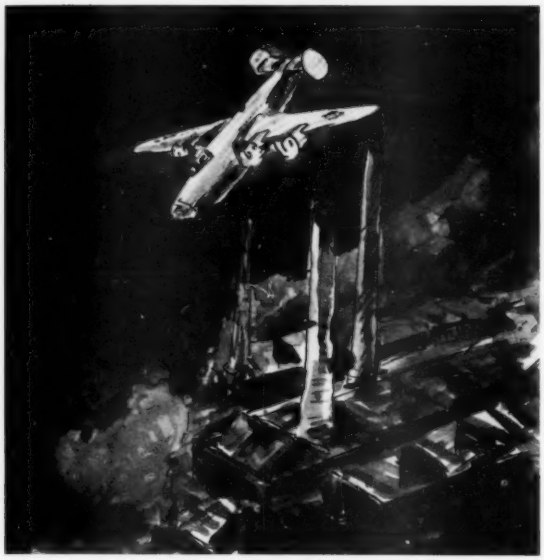
"Hey Captain MacKenzie, you got a butt?"

The young captain trudging toward the operations building, parachute in hand, returned a sarcastic reply. "Flash, six months now we've been flying together, and every day for the past six months you've asked me the same question. What does it take to get it through your thick skull that I don't smoke—can't stand the things!"

"Easy, Mac, easy. Don't get your feathers in an uproar. It was just a simple question!" Capt. Michael "Flash" Flicko's face lit up with a mischievous smile. He loved to get Mac's goat. "You're mighty touchy today, Mac. What's up?"

"Sorry, Flash. But I didn't like the way things went on today's flight. It's bad enough we have to be here, flying in this little 'contingency,' without having to put up with arrogant fighter pilots, inexperienced flight engineers, and inaccurate intelligence information."

"Hey Mac," replied Flash, "it's just the way things are right now. Face it, none of us are really *that* experienced and most of the intelligence reports are only as good as the crew intelligence reports. As for those peashooter jockeys,



forget about 'em. Hell, they only follow us in halfway anyhow."

"I guess you're right, Flash. But still, I'm going to have a little chat with Sergeant Parker. That son of a gun actually fell asleep up there today and, frankly, his 'Z' time isn't worth risking our lives for."

"I think he's having some difficulty adjusting to life over here, Mac—first time away from home, you know—and he's been hitting the town pretty hard after each mission."

"That's no excuse, Flash. You know, back when we were going through flight training, the instructors kept impressing on us the necessity for good crew coordination habits along with effective intercockpit communication. Unfortunately, some of the crewmembers on *our* crew seem to believe these concepts don't apply during combat. I think it's high time we separated the men from the boys on *this* crew."

"Yeah, Mac. Right! Now why don't you cool down. Things'll be better on tomorrow's mission. Besides, yelling at the crew won't do any good; it'll just make 'em mad. Now, you *sure* you don't have a Lucky Strike?"

Flash had a certain disarming manner about him that could always temper a hot situation. The two aviators strode to the operations hut. After a quick debriefing, Flash and Mac cleaned up and headed to the Officer's Club for a little libation and some food. Throughout the evening, Mac reflected on his earlier conversation with Flash. Maybe Flash was right. Maybe it's just me, Mac thought. After all, this little "skirmish" was taking a toll on everyone and maybe I was just overreacting to Sergeant Parker's rather insignificant transgression. But still . . . .

"Mac, it's time to hit the road. We've got an early brief in the morning."

"Right with you Flash," Mac replied as he reached for his hat. "You know, you were probably right this afternoon. I guess I was a little touchy—it must just be the war."

"That's the ticket, Bub," replied Captain Flicko as the two made their way out of the club and toward their billets. "No sense making a big deal out of nothing. Besides, if it'll make you feel any better, *I'll* mention something to Parker after tomorrow's mission. Now, let's forget the whole issue and hit the sheets, 0600 hours comes awfully early." With that, the two parted company and repaired to quarters.

It wasn't even daylight when Mac MacKenzie wiped the sleep from his eyes. Early morning combat missions *had* taken their toll on him. The cold walk to the latrine seemed longer this day as he contemplated the nightmarish mission scenario which surely awaited them in the briefing room. His hand trembled as he drew the cold steel of the safety razor across the morning stubble on his face and he winced as a slip of his hand caused the blade to gouge his face. Damn, he thought, what's wrong with me today! This mission won't be any better or worse than any other, he rationalized. It must have been yesterday's conversation with Flash still bothering me. Oh well, he thought, no time to worry about that now. It's getting close to briefing time. Mac finished his morning routine, trudged back to his room, donned his flight suit and walked toward the squadron operations building.

Arriving at the briefing room, Mac was immediately impressed. Never before had he seen so many multi-motor drivers assembled in one place before.

"Must be somethin' big brewing, huh, Captain?" Flash's voice was unmistakable.

"Don't know, Flash, but I guess we're about to find out. Where's the rest of the crew"?

"Standing in the back—except for Parker. He'll be here in a few minutes. By the way, he didn't look so good this morning. I think he . . . ."

"I *don't* want to hear it, Flash! Just tell me when he gets here."

"Right, boss."

Suddenly a hush fell over the din in the room as a voice from the rear sounded. "Atten—tion! Gentlemen, the Squadron Commander."

The silence of the room was broken by the crisp click of the colonel's heels on the mirror-like asbestos tiles of the briefing room floor.

"As you were," commanded the "Old Man" approach-

ing the lectern in front of the room. What followed was a classified briefing about a mission the likes of which Mac had never seen or heard of before. To accomplish this one safely would require the undivided concentration of the entire crew. Meanwhile, Sergeant Parker was cleared in through the rear entrance of the briefing room, after missing most of the briefing . . . .

"Turning two," called Flash as the number 2 motor of the four-engine behemoth sputtered to life.

"Pressures are good," replied Sergeant Parker, still obviously groggy from his previous evening's exploits.

Through the remainder of the start sequence and taxi, Mac watched the sergeant like a hawk. Flash, on the other hand, was taking the whole thing very calmly. Mac wished he could be so calm in the face of such a demanding mission—it would sure be nice to mount up as a copilot rather than be saddled with the responsibility of command on a mission like this.

Mac eased the yoke back at Vrot and the aircraft lurched into the air. Mac never ceased to be amazed at how this foundation of metal and rivets managed to make it airborne time and time again. The difference on this mission, however, was the formation remained at low-level rather than climbing to altitude for their normal routine.

Sweat began to permeate the fabric of "Mac's" flight suit and gloves. A quick glance toward the right seat revealed that even Flash was twitching uneasily in his seat, the result of the demands of low level flight in a combat environment. Sergeant Parker didn't look so good. However, his apprehension *didn't* stem from fear of the low flight altitude, but rather from the nausea caused by a combination of turbulence, heat, and inadequate crew rest.

As the flight formation pressed on toward the target, Mac's uneasy feeling about the mission intensified. He knew that any moment now his crew's performance would be tested to the limit and he wasn't sure they were prepared for the hell to follow. Then, suddenly, they were there. As if from out of nowhere, the once-friendly skies turned into a panorama of smoke and flames. The enemy fighter coverage which was *supposed* to have been taken by surprise, was airborne in full force. The yoke jerked in Mac's hands as he attempted to control the aircraft, which was now at the mercy of thermal activity. Meanwhile, the backenders did their best to ward off the deadly fighters closing in on them. It was then that Mac's aircraft took its first hit.

The concussion from the impact on the right wing shattered the copilot's window and embedded shards of glass in Flash's face. Mercifully, Captain Flicko appeared unconscious and, for the first time in what seemed to be hours, Mac saw unobstructed, blue sky at his twelve o'clock. Mac immediately began a climb toward safety when he heard Sergeant Parker announce there was a fire in number 2.

"Feather two!," commanded the Captain.

MacKenzie watched the befuddled engineer cut off fuel to *all four* engines, as if in slow motion. Airspeed and altitude limitations, along with the aircraft's marginal controllability due to battle damage, forced the pilot to concentrate *solely* on the ensuing crash landing rather than attempting engine restarts. The end result of this aircrew error was captivity for the duration of the war in an enemy POW camp for everyone on the crew except Flash—he didn't survive the B-24's forced landing . . . .

Brad Mackenzie sat mesmerized by the story just relayed to him by his father, Jordan L. "Mac" MacKenzie. Brad watched the elder aviator's eyes well with tears as he reflected on that last combat mission flown so many years ago—the raid on the Ploesti oil fields. After a long, contemplative pause, the gray-haired old man withdrew the still-smoldering pipe from his lips, sat up in his overstuffed easy chair, and glared at his offspring seated a few feet away.

"You know, that mission was officially listed as a combat loss; but the fact of the matter is, if I'd been a more effective leader—if I'd acted on my instincts and taken control of the crew *and* situation *before* we were airborne—we'd probably be sitting here talking about the nightclubs in Benghazi back in 1942 rather than an airplane crash. Now, I suppose *you* youngsters think you have the market cornered on poor crew coordination and leadership, huh?" The old man's voice crackled with sarcasm.

For the first time in his career, the flight safety concepts Brad MacKenzie had been expounding to crewmembers throughout the MAC system began to come into perspective. His father's story vividly illustrated the result poor airmanship could have, not only on the crewmembers involved, but also on the country's ability to fight and *win* wars. Brad "Mac" MacKenzie left the room that night with a renewed sense of dedication to the MAC mission—accomplished successfully *and* safely. ✯

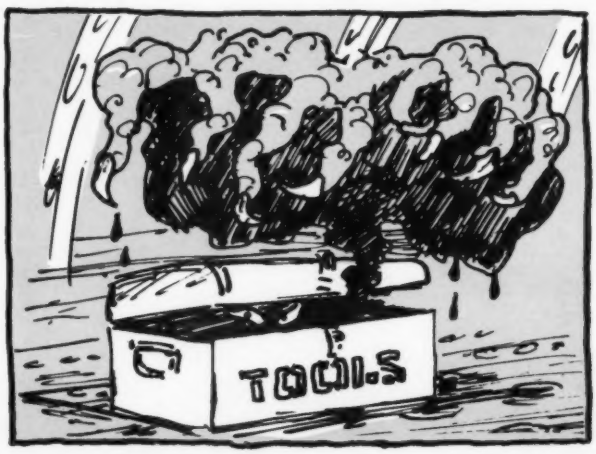
QUICKSTOPPERS

PLAY MISTY FOR ME

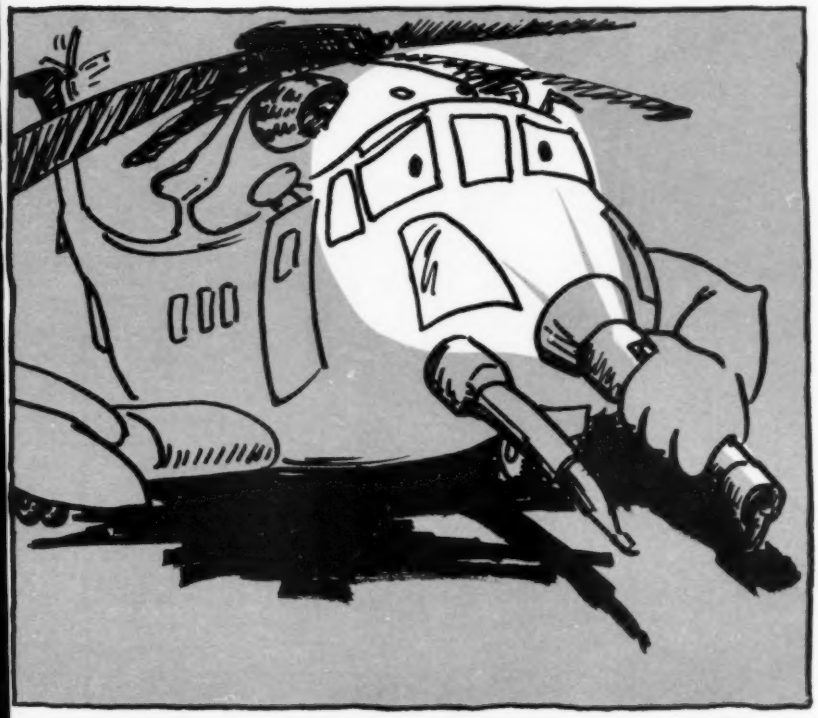
That's what this crew's C-141 did for them (or perhaps it should be *to* them). Shortly after takeoff from an overseas base, the scanner reported hydraulic fluid misting from number 2 hydraulic system. Having their emergency procedures down pat, the crew shut down the number 2 system and repositioned appropriate flight control switches. Evidently, it just wasn't their day as the misting recurred when the elevator switch was placed to emergency (activating the number 3 hydraulic system). The crew turned off number 3 system and the emergency elevator switch while opening associated circuit breakers. Misting recurred when they turned number 3 system, number 1 pump on to lower flaps for landing. The crew manually lowered and locked the gear down. During descent and during turns exceeding 5°, the crew was greeted with more misting. The aircraft landed with systems 2 and 3 off. All went well until about 50 knots when, after two brake applications, the airplane began to veer left. This proved difficult to prevent as nosewheel steering and further brake applications were unavailable. The aircraft departed the runway at a very slow speed before the engineer could turn on the number 3 hydraulic system, enabling emergency systems. The investigation revealed a cracked T-fitting in the number 2 pressure line. Hopefully, next time the airplane will play a more appreciated tune.

KILLER TOOL BOX

Now, how could a tool box be so nasty? Well, a C-141 crew found out while placidly cruising along at FL 390. The ever-alert loadmaster reported unidentified fumes (they're the worst kind) in the cargo compartment. The AC directed compliance with the Smoke and Fume Elimination checklist and everyone donned their oxygen masks. They made an emergency descent and an uneventful (there's that word again) landing. After evacuating the aircraft, the base fire chief located the culprit—a personal tool box on one of the pallets. Really, though, it wasn't the tool box itself, but a can of Ketone (nasty stuff) based spray paint identified as the felonious fouler. Someone had placed the can in the tool box in violation of unit procedures. Like the fighter jocks say, "It's the one you *don't* see that'll kill you."



IT WAS A DARK AND STORMY NIGHT . . .



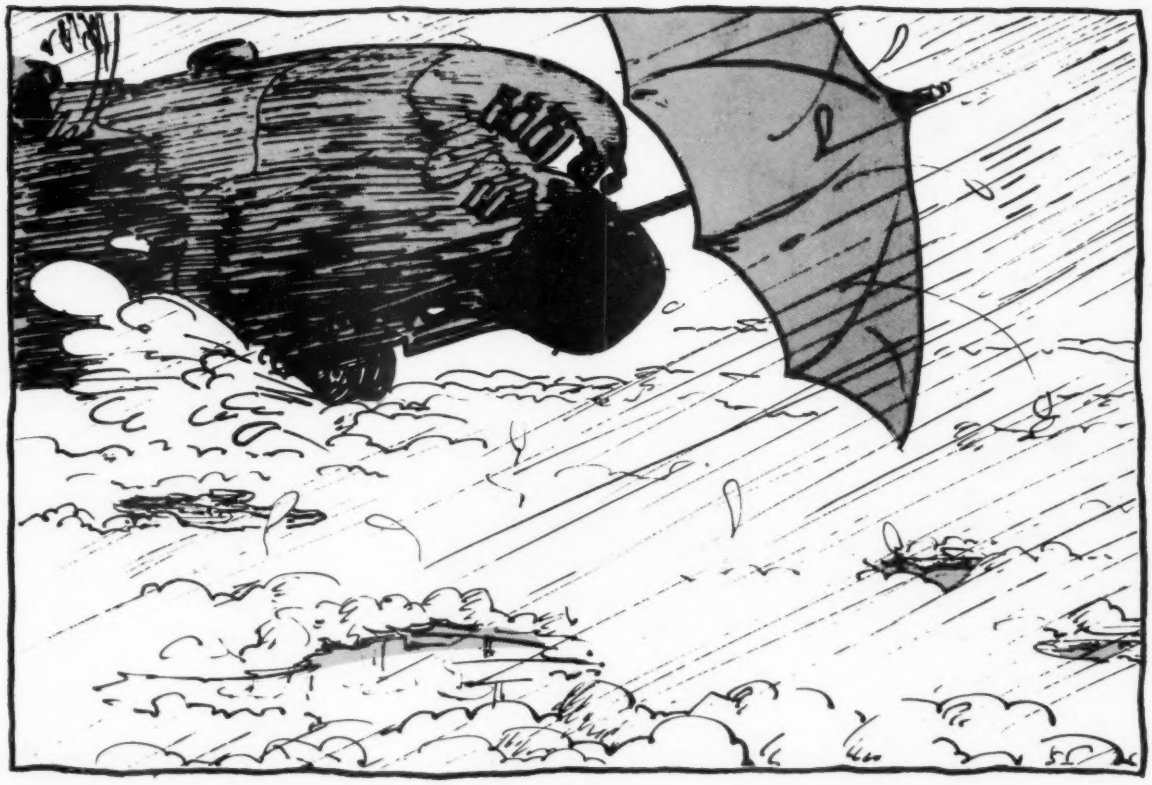
Well, it was a dark but fortunately not stormy night for this HH-53C. Seems they were flying the right observation position during a VFR night air refueling. While they were busy observing, they heard the chatter of a relay accompanied by an ominous flickering of cockpit lights. Two to three seconds later, they lost electrical power from both generators. Since the HH-53C only *has* two generators, this naturally left them completely in the dark. The pilot began an emergency descent while the FE tried to reset the generators, without success. The multi-talented FE managed to start the APP (Auxiliary Power Plant). Once the APP was up to speed, the Number 2 generator reset on the first try. This shed some light on the situation, just as the pilot made an uneventful landing (FSO lingo for "he didn't crash"). The Super Jolly's maintainers found the cannon plug to the Number 1 generator disconnected and a failed capacitor in the Number 2 generator supervisory panel.

Ever wonder why you're supposed to carry a flashlight?

ANOTHER DARK AND STORMY NIGHT . . .

Only this time it was a C-141 and a KC-135 actually conducting an airborne transfer of vital fluids. Seems the student aerial refueler in the Starlifter started reducing the space between the connected aerospace vehicles. The C-141 instructor wisely called "disconnect," and mashed the appropriate button to effect same. The "latched" light extinguished immediately, and the "disconnect" light illuminated. However, after three or four seconds, the "disconnect" light extinguished, indicating a tenuous relationship still existed between the nozzle and receptacle. Meanwhile, the student continued his relentless closure on the Stratotanker. At eight-foot extension, the steady "fly aft" light on the tanker illuminated, and both the '141 instructor and student pressed "disconnect" and called likewise on their air-to-air communication device. However, again the boomer evidently didn't hear them. He directed the receiver "back four." The "disconnect" light went through the previous drill once again. By the time the episode ended, the Starlifter had approached to approximately two-foot boom extension, resulting in damage to the boom and two slightly red-faced pilots. Sometimes, you have to extend the concept of crew coordination beyond your own cockpit. "Confirm disconnect, boomer."

Quick Stoppers



APRIL SHOWERS . . . CAN BRING TROUBLE!

Ah, April. Our thoughts turn to flowers blooming, Easter bonnets, and . . . slush. That's right, erstwhile aviator. Don't let the approach of springtime make you forget that it's still winter in many areas the MAC mission takes you.

Springtime conditions can duplicate those faced recently by this C-130 crew. It was a typical winter day on the arctic island. The temperature was just above freezing. The tower was closed and airfield maintenance folks had called it a day. Rain/snow showers were dampening everyone's spirits. The wind was gusting from 25 to 31 knots. Oh yes, there was also about 2 inches of slush on the runway. With a refusal speed of 80 KIAS and takeoff speed computed as 107 KIAS, the heroic Herk rumbled down the runway. At approximately 100 KIAS, Number 3 prop RPM increased to 105%, with corresponding torque loss to 5,000 inch pounds. The pilot, noting the initial prop overspeed, advised the crew he would extend the takeoff run as long as possible for additional airspeed prior to rotation. Since number 3 was still producing power, he didn't shut it down. He rotated the Herk at 110 knots. Shortly after takeoff, in an obvious display of camaraderie, Numbers 2 and 4 RPM also increased to 105% and torque dropped to 5,000 inch pounds. Being ever alert to their aerospace environment, the crew performed some troubleshooting. Opening the essential AC bus synchrophaser circuit breaker had the desired (and welcome) effect of restoring RPM and torque to normal. While the engineer was busy, the pilot grew increasingly concerned as the airplane descended from 600 to 200 feet before the turboprops regained full power.

Cause: Slush had intruded around the nose gear inspection door panel located below the inspection window in the nose gear well. Result: Besides shorting the synchrophaser, there was damage to the gear doors and antennas along with several severely puckered flight suits.

Cure: Slush is great in a Sno-Cone, but if you're at all concerned about the amount of slush (even if it's within "limits") on the airfield, call out the plows even if you have to wake someone up. (That's what they're for.)

AFTER DEADLINES

BRIEFING TEAM PROMOTES FLIGHT SAFETY—Eleven taxi incidents in the past 22 months prompted General Duane H. Cassidy, CINCMAC, to order a special safety briefing team into the field. The team was composed of Directorate of Safety, HQ MAC Inspector General, staff members. Their goal was to help improve MAC's outstanding safety record of the past few years. They visited 23 MAC units at Air Force bases worldwide. Their message was important and succinct—don't let your guard down and always be on the lookout for potential hazards. The briefing emphasized to air and ground crews the best course of action, if a situation looks dangerous—stop, ask a crewmember to take a look, or shut down the engines and check out the situation first hand.

***TMF* ART DIRECTOR TAKES ANNUAL AWARD**—Mr. Tommy F. O'Laughlin has added yet another award to his "I Love Me Wall." His rendition of the Statue of Liberty, which adorned the front cover of the July issue of *TMF*, was declared the Graphics Arts Product of the Year for 1986 in the Illustration Category. The annual competition is open to all Aerospace Audiovisual Service employees. This marks the second time Mr. O'Laughlin has won the annual award, and he's also won the quarterly Best Graphics Arts Product Award five times. Congratulations on a well-deserved award, Tommy, and thanks from the rest of us on *TMF*'s staff!

CLARK CONDUCTS A 10,000-POUND RICE DROP—A crew from the 31 ARRS and a crew from the 1 SOS participated in a humanitarian airdrop of rice to the natives of Babuyan Island, 80 miles north of the Republic of the Philippines. Typhoon Wayne devastated the island on three separate occasions, destroying the entire rice crop, all tuber plants, homes, and buildings. The Babuyan Island Relief Mission requested help through an international relief agency from 13 AF flight operations. The agency had rice, but no way to deliver it, because the island is surrounded by rocks and is virtually inaccessible by sea. The island's only landing strip is far too short for anything but helicopters or STOL aircraft. The HH-3E crew, a part of the 31 ARRS, took the ground crew to the island, and an MC-130 crew, from the 1 SOS, made the airdrop of 6 bundles of rice, each approximately 2,300 pounds. After the successful airdrop, the ground crew took the rice to a central location for distribution later in the day.

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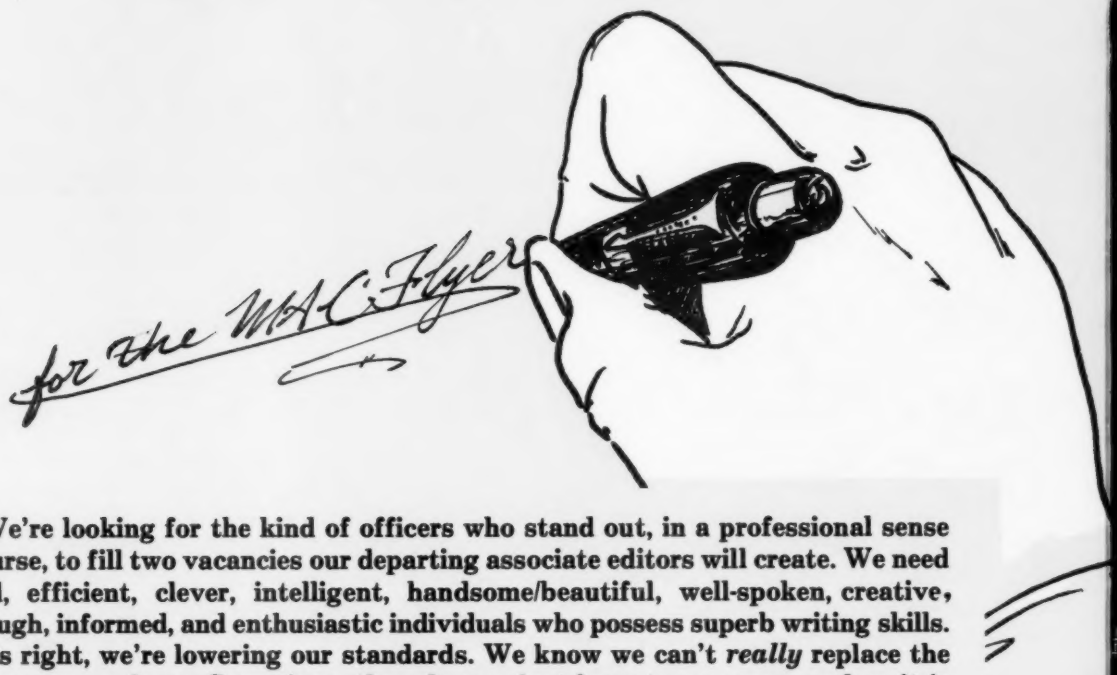
We're looking for a few good pens.



We're looking for the kind of officers who stand out, in a professional sense of course, to fill two vacancies our departing associate editors will create. We need proud, efficient, clever, intelligent, handsome/beautiful, well-spoken, creative, thorough, informed, and enthusiastic individuals who possess superb writing skills. That's right, we're lowering our standards. We know we can't *really* replace the editors we now have. Sometimes though, you just have to move on, and so it is with our current modest authors (who'd undoubtedly be Pulitzer winners except for GPO restrictions), both of whom edited this ad. We'll have positions available in May and July of 1987 for two captains and/or junior majors. Flight safety experience is a plus; a sense of humor is required; modesty is optional. Before concluding you haven't a chance of qualifying, remember: a journalism or public affairs background *isn't* a requirement (though it certainly won't disqualify you). Check through a few issues of *TMF* and you'll see we write just the way we talk (and we're working on improving the way we talk). This could be your big break! If you're even remotely interested (not to imply the kind of tour this is), give Major Weinzierl, Supervising Editor, a call at AV 576-3534/5542.